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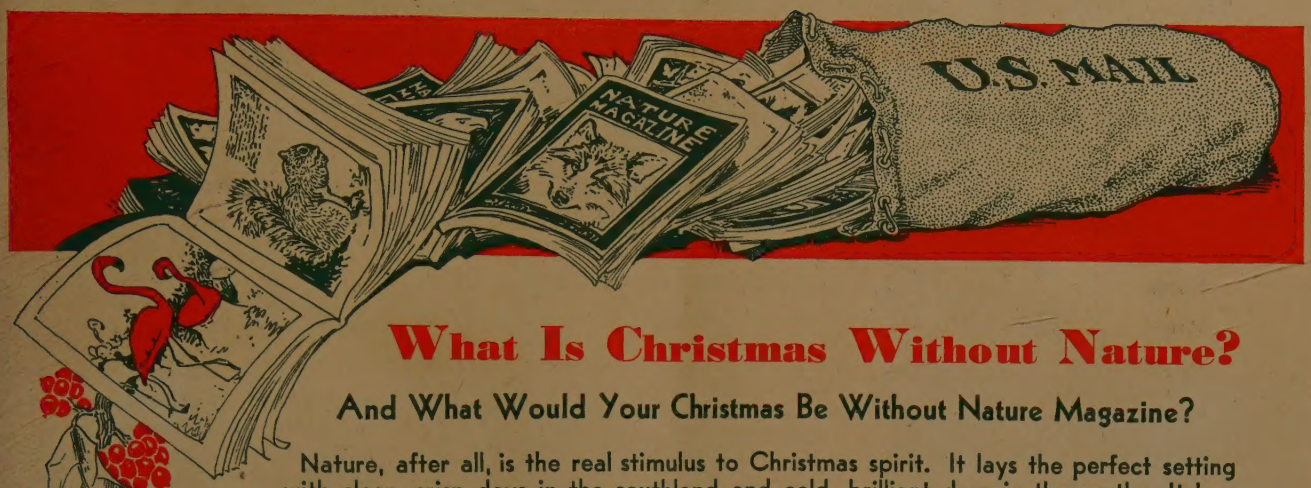

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UNUSUAL PICTURES

BY ERNST KEIL

The term unusual pictures covers quite a bit of photographic ground. It includes those with unusual lighting conditions, pictures secured by double exposure, and the kind we usually miss either because we are minus our camera or because the situation quivers on velvet wings for so short a time that, before we are really aware of the fact, we have lost a picture opportunity. These last are by far the most interesting ones.

The camera offers means of self-expression excelled only by the artist who wields a brush. We all have admired photographs flooded with the glory only sunlight can impart. But there are others where the suppression of sunlight is the dominating feature, where the sunlight has been skillfully used to carve in bold relief the features of the object to be glorified. Pictures of this type are seldom born on the spur of the moment. As a rule they are the result of long, patient and enthusiastic searching.

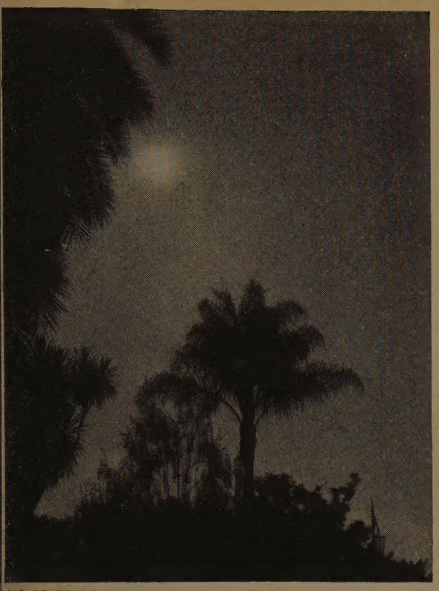
One of my most pleasing experiences in this respect was the picturing of an old church. I had studied the fine old edifice from different points of view and at different times of day to learn as much as possible about its pictorial aspects. Located in the heart of a large industrial city, the church was surrounded by many partially obscuring houses, and a maze of electric light and telephone wires swayed in modernistic insolence in the foreground. However, I was determined to get my picture. From the very beginning it became evident that, in order to preserve the dignity of the object, it would be necessary to lift it out of its everyday surroundings—so to speak—and outline it against a background that would impart majesty and that intangible something we all instinctively associate with the sign of the cross. Fortunately the church occupied a corner at the intersection of two streets. This made it possible to reach it with the camera from the street level. A dozen or more trial exposures were made covering nearly all hours of the day and a great variety of light conditions. I even explored the roofs of neighboring houses in search of a promising point of view, and night exposures while the church was illuminated were attempted. While thus searching, gradually a definite image arose before my mind's eye and at length I knew just exactly what the structure should look like in my as yet very abstract picture. I also had been fortunate enough to discover the one and only spot from which the church was really "picturable".

All preliminary work completed, I was now eagerly waiting for the proper light and atmospheric conditions to give me a hand. It was a day in early April when one of those pre-season thunderstorms surprised us. By four in the afternoon it had spent all its young fury and a beautiful westerning sun made strenuous efforts to pierce the dark, heavy stormclouds that were drifting leisurely toward the west. Photographing against the light, I used a three times yellow filter. This precaution not only prevented "fogging" of the super-speed cut film, but it caused underexposure to the parts of the picture lying in the semi-dark foreground, thus obliterating the electric light and telephone wires and covering with charitable darkness the squalor of the street at its base. "The Vespers Hour" was the result.

"THE ELECTRIC WELDER"—A CHANCE SHOT MADE BY MR. KEIL WHEN CASUALLY VISITING A FACTORY

Although there is nothing to surpass it, sunlight is not the only medium the photographer may exult in. This fact was brought home to me when, one day, I was passing through the boiler shop of a large factory and I noticed a man using electricity for welding. The beautiful display of intense light and delicately blue and green colored smoke created in the semi-dark building the most grotesque patterns and forms on walls and floor. It was fascinating beyond words. The welder sat within a huge cast-iron ring upon which he was performing his work. To protect his eyes and face against the intensity of light and heat created by the electric arc he wore a mask as strange and puzzling in shape as the electric spark of which we know so little. When viewed from the back this mask gave the man the appearance of his Satanic Highness himself. This sinister impression was heightened still more by the electric cable coiled along the floor. A peculiar loop in the cable suggested the barbed appendage of the evil one. The blue-green clouds of smoke rising in front of him completed a picture that I could not afford to miss. Fortunately I had my camera within "calling distance", and, after some wild scrambling through my pockets for a suitable filter, I was ready for action. One tenth of a second exposure with the lens wide open produced "The Electric Welder".

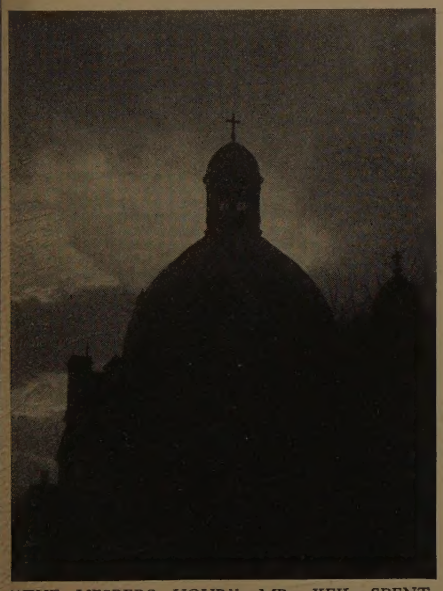
"THE FLOCK AT NIGHT"—A REMARKABLE NIGHT PICTURE MADE AND COPYRIGHTED BY MR. CHARLES J. BELDEN



"MOONLIGHT LANDSCAPE"—A DOUBLE EXPOSURE AND A SHOT AT THE MOON MADE BY MR. KEIL

Another interesting type of picture is the one secured by means of two exposures on the same plate or film. Although by clever and careful manipulation wonderful results may be obtained, this kind of picture is frowned upon by some of the "purists" who declare it a fake, which seems to me a rather harsh pronunciation. If such a picture sails under its true name, I can see no objection to it.

There may be various reasons for the double exposure but the main one as a rule is to unite several elements in one picture that are seldom found together at the same time. For instance one may witness a vivid sunset from a position that offers nothing in the way of landscape that would fittingly go with so gorgeous a display of light and cloud-effect. However, the resourceful pictorialist is not dismayed. He calmly reaches for his camera, produces a suitable filter, composes his picture with an eye for a second exposure which shall furnish the proper surroundings for his glorious sunset. Click, and the curtain falls over the first scene. Before folding up his paraphernalia he carefully marks upon the ground glass or the reflecting mirror with his fountain pen the position of the sun so as to be able to place it in the most natural position when he is ready to produce the rest of the picture. This may be a week or more after recording the first part.



"THE VESPERS HOUR"—MR. KEIL SPENT MANY HOURS OF STUDY TO MAKE THIS PICTURE

In a similar way effective moonshine scenes may be produced. The accompanying picture, "A Moonshine Landscape in Southern California", is an illustration. The image of the full moon was recorded first and its position marked upon the reflecting mirror of the Graflex. A few days later about two in the afternoon a second, rather short, exposure was made. The short exposure prevented the recording of too much detail in the shadows, which would be unnatural in a picture of this kind. Due care and discrimination must be exercised of course when producing either print or enlargement from such a negative so as to bring out the most natural and pleasing effects.

While it is comparatively easy to portray objects or scenes that are stationary, such as buildings and landscapes, there present themselves now and then picture possibilities so unexpectedly and so fleeting that only by the rarest of good luck one gets a chance to record them with the camera.

The home we occupied a few years ago bordered on a large farm and birds and beasts were plentiful at our feeding-station. The rear of our cottage could be reached through a lane formed by the fence surrounding the farm on one side and a hedge on the other side. Entering this lane one summer day I became most unexpectedly witness of a rare and amusing spectacle. There on the ground I noticed six or more blue jays with a liberal sprinkling of smaller birds all intently watching a game of tag between a half grown wild rabbit and a brown thrasher. The latter sat on the ground apparently picking eagerly when suddenly the young cotton tail made a wild dash for the bird. Just before the rabbit reached his goal the brown thrasher would nimbly rise a foot or two into the air only to alight again as soon as the gamboling rabbit had passed. Presently he would return and the two repeated the game. Occasionally the bird would not only rise but follow the rabbit, hovering close over his back. This always worried the rabbit, causing him to leap in the air, squirming and twitching in ticklish delight. Not a sound was uttered during the whole performance and none of the other birds took part in this strange entertainment. All were, like myself, only interested spectators. The barking of a dog not far away sent the rabbit scampering through the fence toward a patch of woodland and the birds soon scattered also. What I would have given for a motion picture camera while that strange game was in progress!

Our Readers' Advice Wanted

The Photographic Department seeks to be of real service to its readers. It can accomplish this best if those who use the department let us know what they would like to have covered in it.

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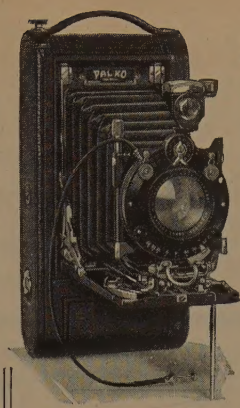

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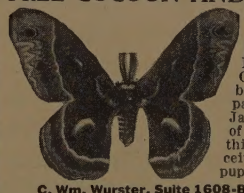

In order that none may be disappointed, the special LOW PRICE and FREE Cocoon offer in my December Nature Mag. ad., top of page 299, is EXTENDED to Jan. 31st. A limited number of Cynthia cocoons, very rare this year, have since been received—price, 4 for $1. Also pupae of Cith. regalis $1.35 each.

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TEN YEARS

NATURE MAGAZINE STARTS THE SECOND DECADE OF ITS LIFE

With the publication of this issue, Nature Magazine starts the second decade of its existence. Ten years should be a sufficient period to permit the making of history and the maturity of a balanced program. Both have come to pass since the appearance of our issue of January, 1923.

When the American Nature Association was established and chartered in 1922, its fundamental objectives were popular education in the value and beauty of our plant and animal life, and through this the furtherance of the practical conservation of these great natural resources. It was evident from the first that a publication that would reach out beyond the already established groups of conservationists was essential to achieve these ends. Thus Nature Magazine was born that through its pages accurate and entertaining information of permanent value might be attractively presented.

Entering what was virtually a new field, the magazine was received warmly by Nature lovers. The membership in the Association and the scope and influence of its publication grew rapidly. From the first, however, the editing of Nature Magazine presented serious problems. It was realized that the lovers of Nature included men and women engaged in many branches of natural science, school teachers, children of all ages, and people just interested in birds, or mammals, or insects, or flowers. Thus the range was from the systematic professional naturalist to the most casual layman. How, then, were we to edit a publication that would be useful to the first and still intelligible to the others? How was an editorial program to be planned that should make the magazine of value to the school teacher and of interest to the child and the amateur naturalist?

It was evident that we must solicit the aid of trained naturalists. At first many scientists looked askance upon Nature Magazine—undoubtedly with reason when they watched our first uncertain steps—because they expected a popularization of the sort then rampant in the Sunday Supplements. We are happy to say that they soon recognized our sincerity of purpose and it has long been our privilege to draw upon the advice of the group of men prominent in natural science who compose our Scientific Consulting Board, as well as many others.

In order that, at the other extreme, the contents of Nature Magazine might be of interest to the great group of laymen, we have constantly striven to combine simplicity with as much completeness as possible; to be fundamental but not elementary. We have recognized a dual need to inform and to entertain. We have felt that this general simplicity of treatment makes the magazine intelligible and interesting to the younger people, and, by the same token, of use to the teachers.

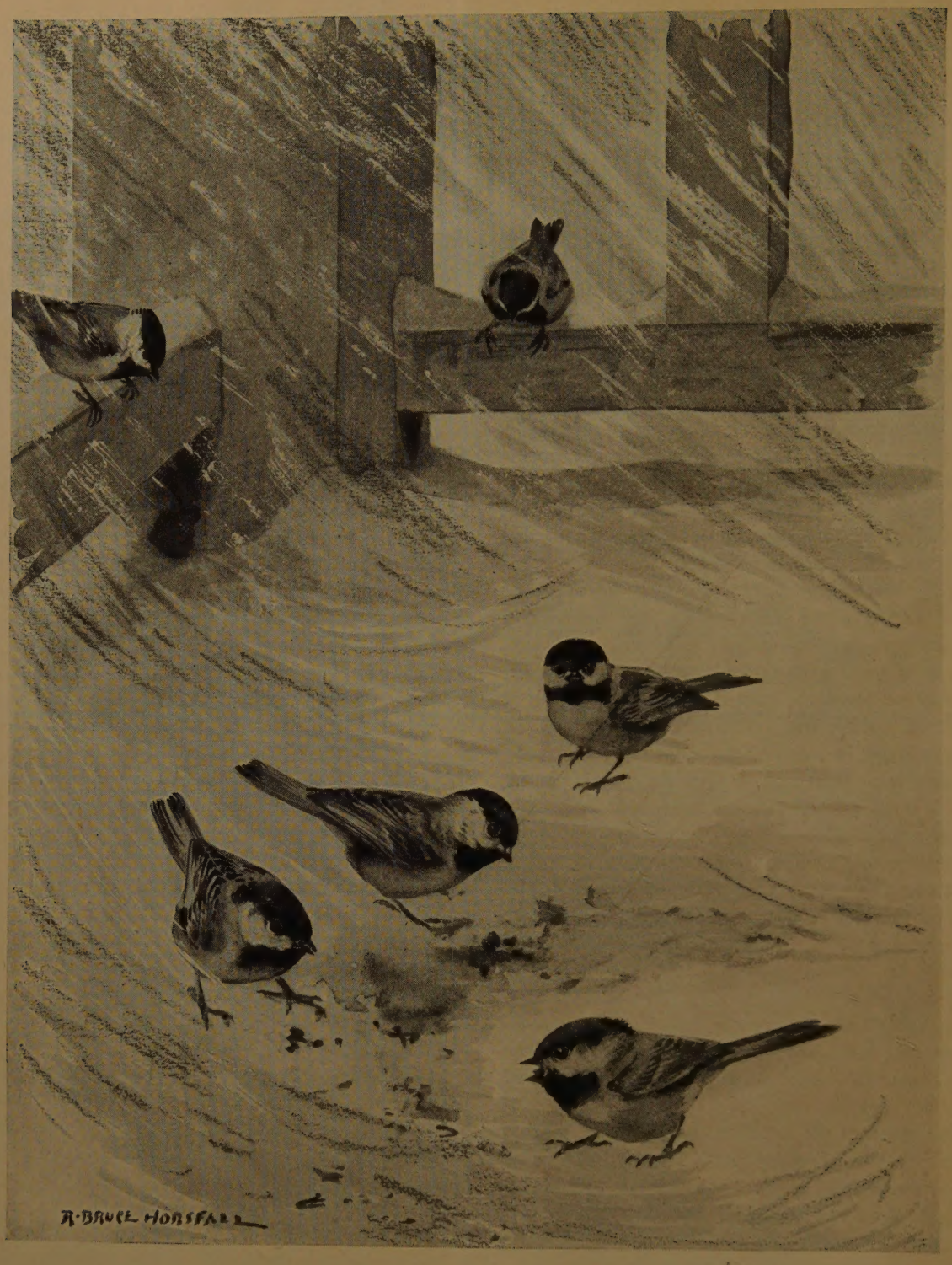
Thus, editorially, Nature Magazine has sought to carry into effect the objective of the Association—that of popular education in natural history. That we have succeeded seems to be indicated by the loyalty of our readers and their frequent expression of approval. We always appreciate their advice and criticism.

In furtherance of our objective, that of conservation, the American Nature Association has sought always to lay the facts of conservation issues before its readers. It is not afraid of controversy but it recognizes that active partisanship often leads to exaggeration. It feels that if the relative merits of both sides may be fairly placed before intelligent people they may be relied upon to arrive at their own conclusions. The Association has never believed it wise to indulge in personal attacks. Truth is a stronger weapon than vituperation. It confesses to a leaning toward the side of the oppressed. The destroyers have enough help.

There are certain issues of both general and specific character upon which we take strong and definite stands. We urge that our National Parks be preserved against any commercial exploitation not consistent with the essentials of adequate and proper administration. We ask for the maximum of tree and flower protection and restoration. We oppose the use of all cruel devices and wasteful methods of taking wild creatures. We oppose campaigns for killing of hawks, owls and other persecuted birds, as well as certain predatory mammals, because these campaigns encourage the ignorant and indifferent to kill without restriction. Man's deliberate interference with the balance of Nature injures man as well as Nature. We shall work for shorter hunting seasons, and complete suspension of killing of any native birds, resident or migratory, whose continued existence is threatened. We favor more and better sanctuaries for bears and beavers and other hard-pressed mammals. We stand for elimination of cheap and baudy commercialism and billboard advertising from rural highways.

In addition to these specific issues of outstanding conservation importance, we are convinced that the future of our wild life depends upon an increasing militancy in its behalf. We hold that the rights of the Nature lover are superior to those of the killer, but that the latter is rapidly robbing the former of these rights. We believe that esthetics is entitled to greater consideration than it has received at the hands of a materialistic civilization and we believe, also, that the recognition of esthetic principles has a definite practical value. We will cooperate with all organizations working along similar lines.

Thus the American Nature Association and Nature Magazine enter upon the second decade of joint existence with the conviction that progress is being made and that we have contributed to it. We hope that we may continue to help to the end that Americans generally may come to place a higher value upon the great gifts of Nature that are theirs. We ask the continued help of our members in the battle to preserve the harassed wild species whose cause we champion.



WHEN THE WHIRLING SNOWS OF WINTER BORNE ON THE SHOULDERS OF FREEZING BLASTS COVER THE WORLD WITH WHITE THERE IS A BRAVE AND FRIENDLY LEGION OF WINGED NEIGHBORS THAT NEED OUR HELPING HAND. THEIR LOT IS OUTSIDE THE WINDOW PANE AND OUR PRIVILEGE IS TO MAKE THAT LOT A LITTLE EASIER

NATURE MAGAZINE

VOLUME 21 JANUARY · 1933 NUMBER 1

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OUTSIDE THE WINDOW PANE

WHERE OUR BIRD FRIENDS BATTLE WINTER FOR THEIR LIVES

BY ADA CLAPHAM GOVAN

ILLUSTRATED BY R. BRUCE HORSFALL

THE CHRISTMAS Season—the time of the year when "old hearts and young hearts—grave hearts and gay", strive to bring into every home an additional bit of light and happiness through the joy of helping others. But how many give thought to the tiny wayfarers on the outside of the window pane,—the gallant little friends in feathers—our winter birds?

How deeply I regret the wasted years, when they went their bitter, uncomplaining way, while I, in the midst of plenty, took them as a matter of course, and never even saw their need. Then pain came to dwell with me. She took from me the world beyond my door. Then, as though in recompense, touched with magic fingers my eyes that saw not, my ears that heard not. I entered into a new and wonderful life, making friends of the birds, from the inside of the window pane.

Such a cheerless day! The snow and sleet were falling fast and my heart seemed as bleak as the day without. Little I realized, as I limped towards the window, that happiness was fast flying towards me, on the wings of the storm. And then I saw him come, a tiny gray sprite, his black cap thickly powdered with the fast falling flakes. Such a mite of a bird to be braving the storm. I wondered who he could be, when "Chick-a-dee-dee-dee" said he, and repeated it three times, so I would surely remember. I limped to the door and threw out some crumbs which he gratefully accepted, then away he flew, only to return in a short while, with every relative he

I PUT A LAMB BONE OUT ONE DAY AND IT BECAME QUANK'S

He held it against all and sundry and from dawn until sunset his tin-horn voice was popping off, warning all away from his personal property

AGAINST THE TRUNK OF THE TREE, WRONG SIDE UP
The white-breasted nuthatches busy tapping pieces of suet carefully under the bark on the tree

owned, even to the cousins twice and thrice removed. Within ten minutes thirty birds were partaking of my hospitality. Though I have identified nearly one hundred birds in our own back yard, Chick-a-dee remains my first love—the truest and dearest of all my birdland friends.

Feeding the birds means far more than just putting out food for them. They gave me not only their gratitude; they taught me to see and hear things that seemed never to exist before. Leaden hours became enchanted ones and slipped away, taking with them all the burden of my former pain and loneliness. And this is the story of a debt of love and gratitude, that grows with the years.

Mr. and Mrs. Nutty, the white-breasted nuthatches, are fascinating little people and are Chick-a-dee's most intimate friends. Back to, they are shaped exactly like miniature ducks, just six inches long from the tips of their long sturdy bills to the ends of their stubby tails. But their necks, unlike a duck's, are short and muscular, because they use their heads for hammers and hatchet to open the nuts and seeds they wedge in the bark of trees. On top, they are a slaty blue with striking black and white markings, and both wear black hoods on their white heads, though Mrs. Nutty's bonnet is frosted with silver. Their snowy breasts have given them the first part of their name.

I marveled one day at the peculiar white "warts" sprouting on the trunks of our twin oaks. Suddenly I saw Mrs. Nutty coming in a terrific hurry, and in her strong bill was a large piece of suet. The bird slapped herself up against the trunk, wrong side up, as usual, and carefully tapped the suet away under a piece of bark. The "warts" were explained, because I watched her tuck away almost twenty pieces of suet in about ten minutes. The wintry winds weren't going to catch *her* with an empty larder.

But hist; the villain appears! Mr. Nutty caught sight of his diligent mate on her last trip, and—would you believe it?—in about ten seconds, the last of that suet had disappeared down his throat. The creature must have been empty to the tips of his toes. I wished he would choke, but he only kept looking for more. I saw Mrs. Nutty when she discovered the theft. The bird ran round and round, absolutely distracted—figuratively I know she was wringing her hands and tearing her hair.

Mr. and Mrs. Quank, the red-breasted nuthatches, are two inches shorter than their cousins, the Nuttys. A lovely deep frosted blue on top, their breasts are nearly as rosy as robin's own. They, too, are dark-hooded, though Mrs. Quank's bonnet glints blue in most lights, and both hoods are striped with white, almost like hoary eyebrows. I put a lamb bone out one day and from that time on that bone was Quank's, and he held it against all and sundry, regardless of size. From dawn until sunset his tin-horn voice was popping off, warning away all newcomers from his personal property.

One dark night, in fact about two in the morning, a cat found the bone—and a dog found the cat—and they all rolled down the back steps together. Quank refused to be comforted. He hunted for and scolded about his lost bone for two solid days, and I thought he would murder his wife every time she was unwise enough to go near him. Of course he blamed *her* for all his troubles. So there was just one thing to do—we bought him another bone and peace again reigned.

I used to lay my cheek against the window, while Mrs. Quank marched up and down the sill, muttering in a low undertone for as long as I would listen. Thus I learned all her troubles, and once, I'm positive, she was violently protesting about the quality of the food. Else why did she deliberately crack open three sunflower seeds for me to see how dry and old they were inside? That she appreciated the fresh new seeds I bought her was plainly

evident, for she came to let me see her in her lovely new spring suit, just before she went away on her honeymoon. She was beautiful in its satiny sleekness, and her breast shone bright as burnished gold, shading into rose under her throat and wings.

Sweet little comrade! Sleeping these many months at the foot of the big pine tree! The cruel tragedies that are an inevitable part of the lives of all our wild birds should make the human heart very tender towards these sorely persecuted and abused little creatures.

Mr. and Mrs. Downy Woodpecker will always be found in Chick-a-dee's group of friends. Two pairs stay with us pretty constantly throughout the year. They are about the size of the English sparrow, in tidy suits of black and white. I got one of the thrills of my life when "Mrs. Downy the first" came to call on me, after several weeks of neglect that had rather hurt my feelings. But my sympathies were all hers, when I saw the gang she was trying to bring up to be a credit to her. Two little girls and three little boys. One in particular she seemed very proud of, and when I got a real good look at him I nearly fell through the window. He was the most remarkable red headed baby boy that ever a Downy mothered. The entire top of his head, from bill back to nape, blazed like a sunrise—he had enough red on his head to make ordinary nuchal patches for a dozen Downy sons. But he is just like his brothers now, and how the care-worn little mother labored to feed that hungry brood, and they as large as she. Human mothers aren't the only devoted ones!

The juncos and tree sparrows are valued winter friends, and an assorted flock of about fifty stays with us from late October into April. One raw day, after all the birds had gone to bed for the night, I saw a tiny form crouched miserably in a corner of the feeding tray. "A sick bird", was my first thought, and I started to investigate. As I reached the door, there came the whirr of fast flying wings; an excited outburst of bird voices. Six tree sparrows (that had apparently left for the night a half hour before) were crowding around the forlorn one. More loud chattering, a few pecks, and away they went, the outcast flying with them. I was mystified!

Next morning I saw my "problem" hunched up in a corner of the same feeding tray. He was eating as fast as he could swallow, stoking his little internal furnace with all the fuel it would burn. Birds can endure intense cold on full stomachs. He looked thin, wretched and surprisingly small. I looked more sharply. Red legs! A rose pink bill such as no tree sparrow ever owned! A plain gray breast with no sign of the "dimple" that is the tree sparrow's trade mark! Why, he was a *field* sparrow, a veritable child of summer, and lover of the heat-parched hillsides! What was he doing in our feeding box in midwinter? But only He, who marks the sparrow's fall, knows what kept that little fellow from going South with others of his kind!

Driven in from the snow-covered woodlands, he had nearly starved before he reached the haven of our yard. Again he was left alone as dusk grew near, and this time four tree sparrows returned. After considerable noisy argument they took their stranger cousin off to bed with them. Six nights they did this, and then "Pinky" became one of the gang. In spite of snow and cold, daily he grew stronger on the plentiful food. Weeks passed, then for two days I missed him. He came again for a short while, one afternoon in late February, and seemed in fine condition. This time he left, never to return. His treatment by the tree sparrows is to me one of the great mysteries that makes bird study so fascinating.

Brown creepers, hairy woodpeckers, golden-crowned kinglets, purple finches, goldfinches, bobwhites, pheasants, ruffed grouse, blue jays—these and many others visit

THE DOWNY WOODPECKERS ARE AMONG THOSE PRESENT
In their tidy suits of black and white they stay around practically all year, friends of the family

SIX TREE SPARROWS CROWDED AROUND THE FORLORN ONE
Truly he did not belong there because he was a field sparrow and should have gone away but his cousins took him in and cared for him royally

our Cafeteria à la Birdland, more or less, all through the winter.

Came an Easter Sunday, with springtime well on its way! But winter had one last crushing blow to deliver—a blizzard of late March. It caught the migrating birds with their northward flight well under way, and slew them by the tens of thousands. Our yard was inches deep in snow, that tragic Monday morning! All signs of food were covered deep, yet the starving birds came fluttering in—a never ending stream. Why did they come to us? What told them, "This is the place"?

For several days we fed nearly three hundred birds. I didn't know there were as many fox sparrows in the world as came to us. The air was filled with such a chorus of Thanksgiving as will never be forgotten by the many who heard it. Though the promise of springtime had betrayed them, neither sleet nor snow nor fiercely beating hail could quench the joy of home-coming in those valiant hearts! It was the most glorious manifestation of thanks by song that mortal ear ever heard!

And what are the inducements offered to attract our lovely friends? Wild bird seed, sunflower seed, suet, pork rinds, minced table scraps, cracked corn, cracked bones, hay loft sweepings—all are most acceptable. Water, food renewed *daily,* and reasonable protection from cats, will attract birds most anywhere.

From the first, all food was placed within six feet of my window. Why miss any of the fun? Last winter the best patronized trays were right on the window sills; three or four inches was often the longest distance between my friends and me. Young Son made cigar boxes into feeding stations, and many are the weak and weary that have accepted the good cheer those boxes offered. Later, he made a splendid feeding box as a part of his school work. It has three glass sides and an open side turned toward the house.

Seeds are placed on top as well as inside. It is mounted on a bark covered post and is just four feet from the piazza railing. A plank eight inches wide and four feet six inches long has one end resting on the railing and the other end on the floor of the station, thus bridging the space. The plank is bark covered on the upper side, and Chick-a-dee and the nuthatches simply select their order from the inside of the station, walk out on the plank, and their work table is all ready for them. If they want to stand on their heads while they dine, they use the bark covered post that supports the station. A ten-cent chunk of suet is kept wrapped around the post, six feet above ground, and a rustic box containing more food is nailed just below the suet.

Downy either roosts on the box or clings to the post as he partakes of his dinner, and he partakes, plenty. A bird bath was added to the ensemble this year, and the sights I saw when the new babies took their first baths in it are almost indescribable. An old dripping pan and pie plate still do noble duty, and are preferred to the bath by some of the birds. In winter water is commonly craved, and often real suffering is endured because of its lack. Two or three cocoanuts, with an inch and a half hole bored in them just above the bottom, are drained of their milk, then filled with peanut butter, melted suet and seeds, and hung on a pulley line. The smaller birds eat the contents, the cocoanut meat included, and are free from molestation by the jays and other less social customers who must have a place to roost. The empty shells are used for shelters by storm-bound strays.

Don't say you can't afford to feed the birds because of "hard times". Times are *always* hard for them! Above, below, and from all sides danger stalks them by day and by night.

"As free as the birds of the air." Such a pretty saying, yet I wonder if anything has to fight harder for its very existence than does a bird? I wonder if anything so useful is as little appreciated by mankind in general? We deny *them* the privilege of waging a fair battle for their own existence. Thousands are killed during the hunting season, or so badly wounded that death would be a mercy. Even our children rob the nests and use the birds as targets for sling-shots and guns. Thoughtlessly, we turn our house pets loose to stalk them, when hunger drives them into taking desperate risks to get the food they must have in order to keep from freezing to death. Next to the cold blasts of winter, mankind is their worst foe.

And yet is there anything more beautiful, more suggestive of things heavenly, than a bird in a tree singing his heart out? Just because he is allowed to live, he thanks God for it in the only way he can, by being happy and by sharing his happiness with others.

In these days of discontented youth and drained incomes; with the lack of sympathetic understanding between child and parent so evident on all sides, *our* birds should become "the tie that binds".

Largely through them the family interest may be kept up, because we all "speak the same language". In their gracious and lovely company, I find my panacea for all the ills of life, and gratefully acknowledge that looking through the window pane has become a glamorous adventure because of the inspiration of their friendship.

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UNDER A LILY PAD

BY JOHN BARTRAM

THE housing problem in the lily pond seems to be severe. This one lily pad must furnish a nursery for three insect families. The large white eggs at the left belong to the whirligig beetle; the darker ones to the right were probably laid by some kind of caddis-fly; while the semi-circular mass at the bottom belongs to the long horned leaf-beetle. Why should these three gather on this one little lily pad to lay their eggs? Perhaps the rent is so high they must double up. Whatever the cause, many other lily pads had as many tenants upon them.

THE CECROPIA MOTH STOOD FOR THE FULFILLMENT OF PROMISES

As she waited through the winter for beauty to emerge from the drab cocoon, little sister had her moments of disbelief and was often on the dark brink of disillusion

ADVENTURES IN A WINDOW JUNGLE

BY MARION STAPLES HALLER

PHOTOGRAPHS BY THE AUTHOR

Did you ever see a green-house where the flowers are incidental products? Our "window jungle", as the children called it, is just such a place.

The gorgeous creatures, which emerge in this jungle to put the blooms to shame, are a rainbow gathering of moths and butterflies. The idea of providing a green-house to harbor the cocoons and pupae of these lovely creatures until their emergence, was the result of an inspiration to consolidate the appalling and ever-increasing collection of insects, largely "caterpillars", gathered by a zoologically-inclined small son of five. Before the advent of our miniature zoo in the form of the window green-house, the nursery was cluttered with a fleet of boxes and bottles, each containing its prize bug, which invariably escaped in due course, much to the discomfort of the rest of the family and the particular dismay of baby sister, age two.

Perhaps it was because small sister had had Nature study so forcefully thrust upon her by an enthusiastic brother, that she had a decided aversion to anything that crawled. In spite of our attempts to explain to her that these larvae would some day have wings and be transformed into the gay butterflies she so admired, she was still skeptical.

Fortunately, the larvae, safely installed in the green-house, busily went about proving our unbelievable statements concerning their life history. As most of the larvae had been captured as they were seeking safe winter quarters, they proceeded to make the best of the situation and spin their cocoons before the fascinated gaze of their young captor and his partially convinced sister.

Before we continue with this little drama, you might be interested in knowing about the green-house itself. The one we used is a commercially-made, sturdy structure twenty-six inches long, by sixteen inches wide, by sixteen inches high, which arrived in sections ready to be screwed together. As we decided to make a landscaped garden of the whole green-house, it was necessary to have

THE WINDOW JUNGLE WENT TO THE NURSERY SCHOOL FOR A WEEK

While there two moths and a butterfly obligingly emerged from their cocoons to delight the children and now the school is to have a window jungle all its own

a leak-proof galvanized tray made, which would just fit on the floor of the green-house. The sides of this tray were three and a half inches high, and strengthened at the top edge by being rolled over wire.

The entire family spent a blissful Sunday creating this new world in miniature from the galvanized pan, a box of pebbles for drainage, a large basket of rich loam, and a varied collection of small plants from the garden and rock garden, including a good supply of moss.

Mother and Dad at first tried to let the children create their own world unmolested, but the temptation to unleash creative genius was more than we could stand. Soon the children and their parents were all in consultation on the nursery floor, creating a sylvan glade and even designing and constructing a realistic river and irregularly oval pool. This aquatic addition to the garden was a most successful scenic improvement all winter, especially as our young realists paved the river and pool, which were three inches deep, with colored shells and stocked the sparkling water with tiny live goldfish from the five and ten cent store. However, the following spring, after rescuing a disgruntled and highly indignant luna moth from the deeps of the pool, we decided to forego realism for the safety of our winged guests. The goldfish changed their abode for a mere fish-bowl, and a piece of mirror, cut to fit over the top of our water course, made an excellent substitute for reflecting stream and pool.

When our garden was completely landscaped, we set it in place on the floor of the green-house and screwed together its glass walls and roof about it. We might possibly have fitted the tray into an already assembled house, but with such a snug fit there was danger of breaking the glass. And then, it would have been most difficult to create a world in cramped quarters!

To insure good ventilation for the plants and wildlife in our newly-created Eden, we removed a pane of glass on the rear roof and fitted in screening so that the glass could be set in place over it or removed at will. While the larvae were still roaming, we kept the large lid, which formed the front roof, tightly closed. After the larvae had tucked themselves away for the winter, we kept the cover up most of the time, more readily to admire our handiwork, and to keep from steaming our plants into too luxuriant growth. During the few weeks when we had kept the cover shut, the trapped sunshine and moisture transformed our tiny plants into rampant jungle vegetation. It was at this time that our enterprise was christened by the children, and continued to be called, the window jungle.

By March the children began to feel that the inhabi-

tants of the cocoons and pupae had rested long enough. As their fever of anticipation rose, my misgivings as to the pedigree of most of their larva menagerie became greater. It would be sheer tragedy, if the final act in their natural history drama should be peopled with drab millers and cabbage butterflies. To avoid such a catastrophe, I added to their collection a dozen named cocoons, which I ordered from a concern dealing in this commodity.

Time passed, and still no sign of the iridescent, fairy-like, winged creatures I had predicted. The children passed from exultant anticipation to bitter depression. Disbelief in my story of metamorphosis was but a step off, when NATURE MAGAZINE came to my rescue. The April issue arrived with two full pages of exquisite photographs by Ernst Krause depicting the emergence of a luna moth and a butterfly.

The young disbelievers studied the pictures in silence but with renewed faith, and, as if by mutual inspiration, they rushed to the window jungle. When their wild cries of delight presently followed, I feared I had over-excited them into an hallucination. But sure enough, there on a bending begonia clung a huge cecropia moth, his damp wings hanging limp. The poor creature felt woefully insecure as he waved his forefeet in the air seeking firmer support, while the begonia bent lower and lower under his weight. We tried shifting him to another plant, but he was still dissatisfied. As a final resort, we stuck the cocoon from which he had just emerged on a stick and propped it upright in the earth. No sooner had we transferred the cecropia to this perch, than he settled down in perfect contentment and proceeded to wave his rapidly drying wings in a most sedate and leisurely manner. This "sitting post" proved to be a popular perch even after the moths could fly, and was the cherished Mecca of each new emerger.

News of the miracle of metamorphosis being enacted in our home, spread like wild-fire among the younger generation. They started to come by twos, by fours, by droves. Then many of them made a second visit with their mothers. So sincerely interested were our young zoologists' classmates in Nursery School, that the jungle visited school for a week. Two moths and a butterfly obligingly emerged to join the Nursery roll-call. This Nature Study innovation was so popular with the children that the school is planning to have its own Jungle.

"Was it worth all that time and trouble?", an unimaginative visitor asked one day concerning the greenhouse experiment. Rather to my astonishment, all four of us, like champions of a cause, became eloquent in its eulogy.

This year the children have gathered even a motlier collection of larvae. In fact, the thrilling success of this first venture of our two budding naturalists has inspired them to create, also, a terrarium of veritable Noah's Ark proportions. Our pet frog from the swimming pool, a duet of jolly crickets, a handsome gold and black spider, a pair of dashing crimson salamanders—but, gracious me, this is another story!

Our window jungle now has become a permanent family institution. Among its many benefits, it has converted a timid little girl into an ardent naturalist; it made a long Vermont winter less bleak by harboring a bit of summer; and then, as a prophet of spring, it gave us from drab, brown cocoons an intimate glimpse of such breath-taking, exquisite, shimmering beauty, that one could not but believe that all is right with the world.

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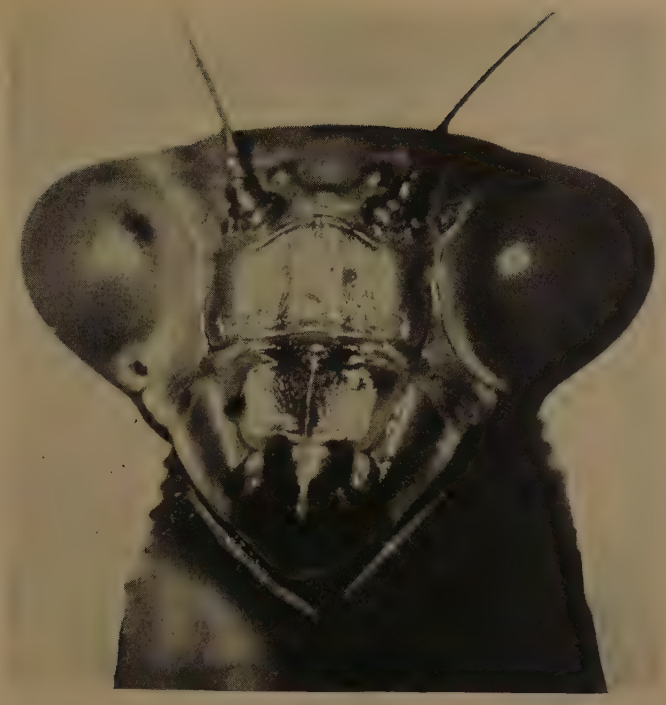
THE AUSTRALIAN MAGPIE

A CHEERFUL MUSICIAN

BY KILROY HARRIS

THE Australian "magpies" are really piping crow-shrikers, and are noted for their song. There are several species, including the famous organ bird of Tasmania. The latter seems to imitate a hand-organ a little out of tune. The magpies notes are cheerful and flute-like, and it has been claimed that the magpies are among the finest songsters in the world. They are to be found as much-loved pets in many Australian homes.



HEAD-ON VIEW OF A PRAYING MANTIS

This is what the seeing apparatus of this curious insect looks like when viewed through the microscope. This is, of course, a greatly enlarged view

Mr. Pratt is the author of the pictures that go with his story and represent the interesting work that he is doing as scientific photographer of the U. S. Department of Agriculture. Both pictures and text are copyrighted.

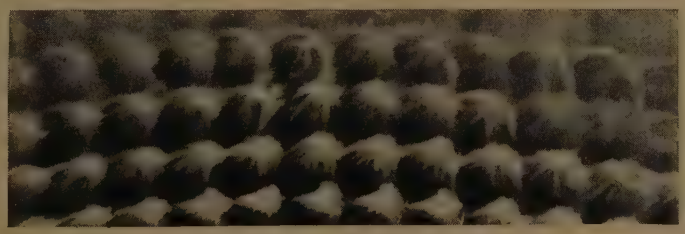
THIRTY THOUSAND WINDOWS TO THE SOUL

BY J. G. PRATT

A POET calls the eye the "window to the soul." If this be true and we humans had as many windows as the lowly insect, not only our character but our very thoughts would be as an open book. Their great bulging eyes are constructed, doubtless for purposes of defense, to see practically in all directions at the same time, although their range of vision is quite limited.

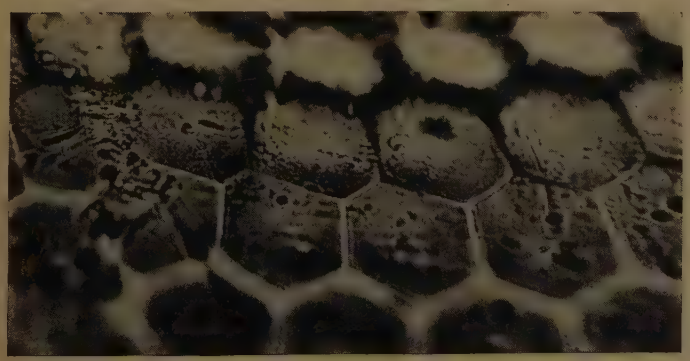
Insects' eyes are of two kinds—the ocelli or simple eyes; and those of the compound variety, made up of anywhere from a few to many thousands of ommatidia or separate visual elements. Caterpillars and most other immature forms have only the ocelli; most other insects have compound eyes and some in addition have three ocelli, placed in the form of a triangle in the front of the head. These latter in insects such as the mantis and the grasshopper are large luminous orbs, resembling somewhat in miniature, the headlight of a locomotive.

Compound eyes can be likened to the rounded top of an observatory, although instead of housing one telescope, in the case of the Odonata, the division of insects including the dragon flies, it is estimated that in each eye there are upwards of thirty thousand of these separate visual elements.



THE REASON WHY IT'S HARD TO CATCH A FLY

This is a picture of the facets of the eye of the house fly, the subject magnified 350 times



A STILL MORE INTIMATE LOOK AT A MANTIS' EYE

This photograph, also magnified 350 times, shows the configuration of the facets on this insect's eye

Each element consists of a long tube, containing the nerve system that connects the facet with the brain. In some insects these facets are round and protruding, while in others they are hexagonal and only slightly biconvex.

It is a generally accepted theory that each facet can visualize through its long telescope-like tube but a very small portion of an

object, and that the impression made upon the brain of the insect is much like a mosaic, perceiving distinct form but a few feet away, although perception of movement extends to a much greater distance. Did you ever notice, by slowly moving your hand, how close you can get to a pestiferous fly; while a quick movement is noticed a long way off?

The facets are so microscopic that their form can be discerned only at very high magnification, and owing to the rounded surface, only a few at a time can be brought into focus for the purpose of photography.

The camera which made these marvelous photographs possible is a readaptation of an ordinary micrographic outfit. These outfits are intended for the photography of transparent subjects by shooting the light through the specimen toward the lens. By focusing the light upon a concave mirror however it was found possible to reflect it back upon opaque specimens with such intensity that magnifications up to two hundred diameters can be obtained with an exposure of but two or three seconds. All heat is eliminated by passing the light rays through a water jacket. Many marvels are found through this photography.

HERE IS A HARD ONE TO FIGURE OUT

We will let you in on the secret. This picture shows the compound eye and ocellus of a grasshopper, magnified 40 times

WHAT GRASSHOPPER AND LOCUST SEE WITH

At the left we have the geometrically arranged facets of the locust's eye, magnified 350 times, and at the right a close-up of the compound eye of the grasshopper at the same magnification

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? ? ? . . . AN IMPORTANT QUESTION . . . ? ? ?

May we have your helpful advice? With this issue Nature Magazine starts the second ten years of its life. The question of a ten-year index has arisen. While each volume has been indexed a number of our readers have asked for a composite index. We have no way of knowing, of course, how many individuals and organizations have preserved Nature Magazine for the entire ten years or a major part of that period. We can and will, however, get up a ten-year index if there is a demand for it. We would have to sell this at cost and we estimate this cost as between fifty cents and one dollar. You can help us by dropping the editor a postal card or a note saying that you would be interested in such an index. This would not, of course, obligate you but would give us an idea of the need for performing this somewhat arduous task. Thank You.

THE PASQUE IS LOVED
BY PLAINS TRIBESMEN

AND HAS A LARGE PLACE
IN THEIR FOLKLORE

THE PASQUE FLOWER

BLOOM OF DAKOTA FOLKLORE

BY MELVIN R. GILMORE

THE pasque flower is one of the prettiest flowers of the northern prairies, and is a bloom that has a deep hold upon the affections of all the native tribes throughout its range from the southern border of South Dakota to Great Slave Lake. It is the earliest flower to put forth its blossoms in the springtime, and often appears to gladden the bare brown hillsides with its bluish-purple shade before the snow has melted where the deep shadows lie. The pasque flower is hairy all over, and the Crees, commenting on this characteristic, say:

"It is a brave little flower, for it comes so early in the springtime, while the weather is still so cold that it must wear its fur robe."

The people of the Dakotas have a number of charming folk stories about the bloom. In the long ago, they say, whenever any of the people passed near where the pasque flowers were blooming, the flowers tried to show the friendliness they felt for human beings by nodding their heads in the chilly spring wind, showing their smiling faces and by saying "Good morning! Good morning!" But the people passed them unheeding. They became downcast as a result of this cold indifference, so nowadays, they bashfully turn their heads to one side as they nod and call their kindly greetings in their sweet low voice. Although rebuffed, they still feel affection for human beings.

According to Dakota lore, the pasque flower once told the tribesmen its mission and purpose in the world. "I have been trying always," the flower said, "to encourage you children of the human race in all generations by showing you and telling you that spring is here, and that the buffalo will increase, and now your parents will prepare to go on the buffalo hunt so that you shall have plenty of food and good clothing.

"Now I have come out first of all the flower people so that the Dakota children can pick me up and kiss me and play with me; and little boys will know that it is time to practice shooting with the arrow."

The pasque flower continued to say that after it had appeared, then came the other blooms, and the animals put on their summer coats, and the birds their nuptial plumage. But by the time the springtime beauty was at its height, it had become faded and gray, and ready to die. And it concluded:

"Now, my grandchild, this is an example for you, to show that you, too, must become old and gray, and, dying, shall pass on to the next happy land, where your ancestors have opened the road before you. You look for them and miss them here below, for they have gone; but you shall meet them there when you yourself shall go there by and by. Remember me to all that generation which follows after you. Tell them that you saw me. I shall return again in early springtime, so I shall speak my message to generation after generation, even to all generations."

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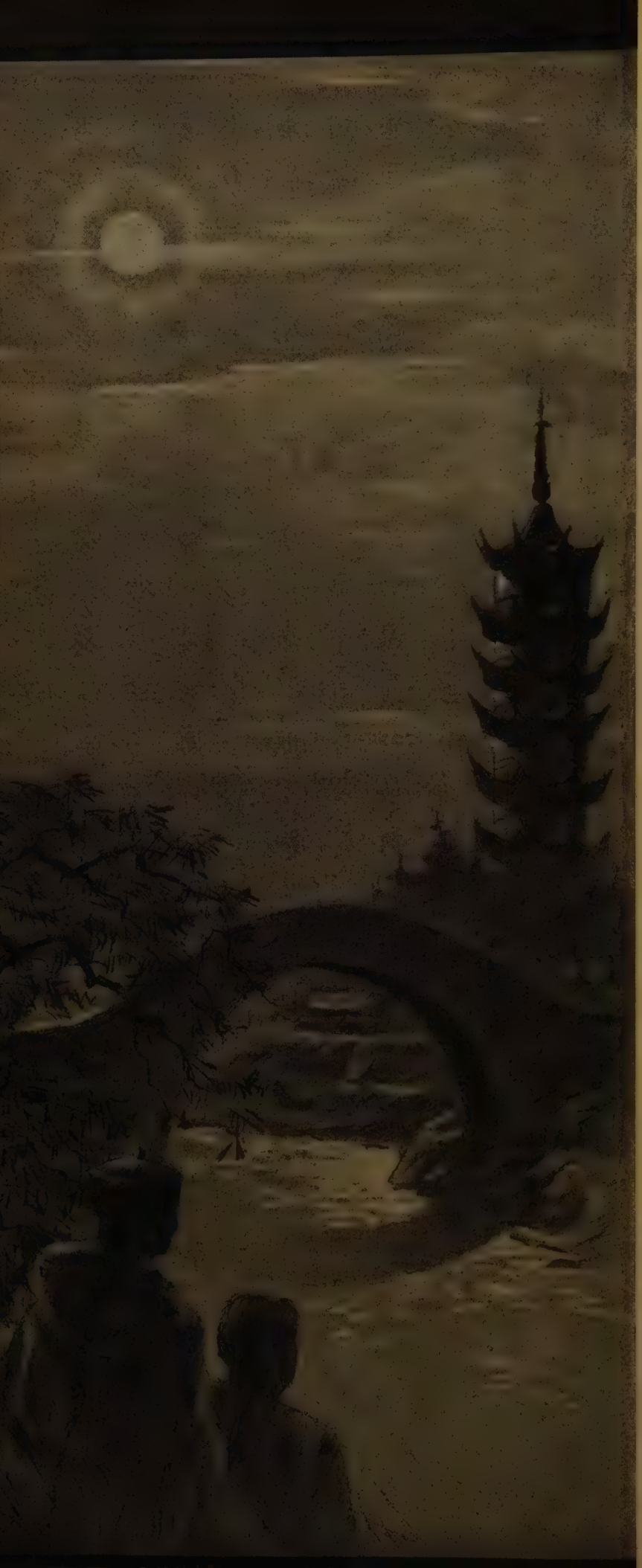
Among the interesting articles in the February issue of Nature Magazine will be one on insects and their intelligence by R. W. G. Hingston; the interesting story of cinchona and its gift to humanity by E. E. Stanford; a helpful article on what to plant on chronically bare spots in your yard; and many other valuable, enjoyable and helpful features.



THE CHINESE HAVE WORDS FOR IT

NO COUNTRY in the world is more sensitive to changes in the weather than China. Living close to the soil, as do most of its four hundred million inhabitants, with the margin between starvation and plenty so close that a single hail storm may spell the difference to hundreds of thousands of people, this nation has always kept its weather eye cocked at the skies. Through the centuries of its culture China has built up a wealth of superstitions and proverbs concerning the behavior of the winds, clouds and sun.

Many of the sayings and rhymes are no longer literally believed by all Chinese, but have given way to the influence of scientific meteorology. Some of them, based as they are on the experiences and observations of hundreds of years, are accurate in the extreme. All of them, however, are phrased in striking, picturesque language which indicates their continual refinement as generations have repeated them to new generations—since the memory of man runneth not to the contrary.

Lightning, thunder and hail all have their deities whose images stand in the Chinese temples. The Duke of Thunder is represented as an ugly, black-faced monster with the beak of an eagle and the wings of a bat. Encircling him and giving off lightning flashes are the drums that he beats with the hammer and chisel he carries in his hands.

The common greeting in China is not "Good morning" or "How do you do?",—but "Have you eaten?". And one of the most important factors deciding the answer is rain. So, naturally, the people have put this important aspect of the weather under divine protection. In the spring if rains do not come, the people place willow branches at the doorways of all their shops. These are prayers directed to the god of rain. If no results follow, they don wreaths of willow and have processions

BY MABEL HUGGINS

DECORATIONS BY JEX

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in which the delinquent god is carried to some sunny location where he is left to roast in the burning sunshine until he can feel just how hot and dry it really is!

Though they make kotows and burn incense and beat drums in an effort to prevail upon his mercy, they have, however, no real hopes he will be moved by their acts. "It makes no difference in how great a hurry men may be for rain if Heaven doesn't busy itself about it; but as soon as Heaven becomes busy about giving rain, one downpour is sufficient," they say in the words of an old proverb.

Another old proverb runs—"From the southeast comes Buddha rain." This simply means that the good rains —the quiet, gentle rains that soak into the ground—all come from the southeast. But the wind from the other direction is inspired by evil spirits—"from the northwest comes boisterous, hail-bearing rains."

Since the time of Noah, men have been looking at rainbows and reading into them different meanings. The Chinese say: "If there's a rainbow in the west, there'll be more rain," and add in the language descended through untold generations, "if there's a rainbow in the east, the windlasses will be busy"—meaning that it will be dry and the people will have to irrigate from their wells. Other points of the compass receive attention—"if there's a rainbow in the south, the river banks will break with floods and the people will feel around in the water for fish," or "if there's a rainbow in the north, there'll be rebellion and confusion."

To the Occidental a halo around the moon means a change in the weather. The Chinese have a similar observation: "If there is a 'gate' in the circle, the following day will be clear; but if the circle is complete and without a 'gate', the next day will be cloudy."

Sunsets, too, are significant. In the

summer a clear, red sunset is an indication of a hot day. "A fire has burned up the clouds. Tomorrow will be hot enough to scorch people to death." But if through the late autumn and early winter there are clear sunsets and the sun is red, calamities will follow during the next year. Superstitious folk now recall that there were such sunsets the year before the Boxer uprising.

If, when the sun is about to set, clouds seem to rise up to meet it people say: "Clouds come to meet the sun; the Dragon King cannot rest." This is their way of indicating that it will rain on the morrow. The Dragon King will be so busy sending rain that he will not have time to rest.

Perhaps some of the most interesting Chinese maxims are about the wind. Every spring there is a feast day upon which people burn paper money at the graves of their ancestors. In addition they always freshly pile up the mounds of earth which are over the graves. They believe that if the wind blows that day, it will blow for the following forty-nine days. They also say, "in the summer it will rain just as many days as the wind has blown in the spring."

The direction of the wind, likewise, indicates the coming weather: "The east wind brings drought; the south wind brings rain; if it blows from the south for three days, it will rain; a northeast wind brings continuous rain and the sky is not clear." By far their most poetic idea about the wind is that—"the northwest wind is the key which opens the sky;" that is, the wind that drives away the clouds. It is generally believed that all the clouds have homes in the mountains—each cloud having its own home. If a northwest wind begins while the sky is covered with clouds, they will soon break. "The key has opened the sky." Then each cloud will quickly "run" back to its own home in its own mountain, leaving the heavens blue. And in it all there is some truth.

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MAGGIE, WATCHDOG AND PET

BY MARY I. STANTON

ONE of the most interesting and vigorous characters in this friendly neighborhood is Maggie, the burro that lives next door. She was named "Maggie" because a girl friend had a donkey named "Jiggs." She is supposed to be owned by Bill, the eldest boy in the family of five. She really belongs to us all.

Maggie is not only a neighborhood pet, but is our watchdog as well. At night any unusual noise in the back yard near her barn promptly brings a loud bray of alarm. At dawn she broadcasts a resounding heehaw that awakens everyone, even youngsters who love to sleep late, particularly on school days.

MAGGIE AND BILL

A personality, a pet and a friend to old and young she is

The first thing the children do in the morning is to go out and greet Maggie, turn her out of her stable, pet and feed her. If her hunger is not satisfied, she stands in front of the kitchen door and loudly voices her needs by a continuous and touching braying. Then Bill comes out holding a pan of grain, or a carrot, or a piece of toast, or some kind of fruit, and with this exciting lure held before her nose she races after him all over the neighborhood.

Under all conditions Maggie conducts herself with becoming dignity and fearlessness. She escapes from her little barn as often as she can. She dives into garbage cans or picks the grass and growing things in our yards. No fences hamper her movements. Strange dogs have no terror for her, and all retreat as she boldly moves toward them. They wish no lesson from her active heels.

Maggie was the chief actor of one eventful day. For days three of the children had been begging Bill to let them ride the burro. At last I saw him put them on her back, the youngest in front proudly holding the bridle rein. They went up the street as the neighborhood turned out to see them off. For some time, it seems, all went well. Maggie trotted along docilely, but at last she found grassy pickings and stubbornly wandered on and on.

Time passed until finally Bill and one frantic mother found the lost children and put them into the automobile while the big boys rode Maggie home. Even then she came in gayly, at a wild gallop, scattering boys along the way. She always moves at rapid pace as she nears the barnyard, no matter how many may be on her back. When the children were reprimanded for their escapade, I heard one little boy whimper: "Maggie wouldn't come home!" And for once I thought the youngsters should go unpunished.

Maggie has taught us many lessons. She never complains about life's hardships, nor does she whine and weep because she must do some useful work. Often her antics excite laughter, and awaken a kindly, neighborly spirit. Altogether Maggie is an enlivening and inspiring influence in our community. Her ancestors and her kind have helped to build a great civilization in the Southwest and make it a fit place for boys and girls to live in; and yet she knows not her own greatness, nor does she ask any praise for the work she has done. She lives a brave and friendly life.

THE CAT-HEADED BIRD

BY JEANETTE SPEIDEN

"MA-DU DIAW" was in a sad predicament when we first saw him. He was a prisoner in the attic of an unoccupied house. How he came to be there we do not know, but there he was beating his small body against the window glass in futile efforts to escape.

It was just by chance that we saw him. We were playing tennis below when the moving form in the window caught our eyes. A rescue party was promptly organized. When we threw open the door of the empty room, however, he did not recognize us as friends and deliverers, but flew to a far corner among the cobwebs. Quivering with fright, he clicked his bill defiantly as we leaned over him.

His soft body relaxed in my hands as I picked him up but his sharp claws closed on my fingers, tightened with the strength of despair. He kept blinking, closing first one yellow eye and then the other, clicking his beak menacingly but making no effort to escape.

Our large insect cage happened to be vacant so we housed him there for the night. We supplied him with water, wondering if his owl wisdom would enable him to recognize water served in a dish. It was nearly dark, too late for us to go food hunting as parents and guardians of young owls should.

The next morning we made a peace offering in the form of a strip of raw meat. But cold meat on a string does not closely resemble fresh meat supplied by thoughtful parents. So I went toad hunting, but as luck would have it, the day was dry and the sun hot. Every toad had retired to his own particular hiding place to keep moist and cool until evening.

Word was then sent to the boys in the Primary School that a small toad would be much appreciated. The old Chinese gardener was requested to watch for the creatures, too. He pulled the three hairs in his whiskers thoughtfully, and looked at the cloudless sky. His verdict was, "I guess the toads will come out when it rains." He did find a snail and explained in fluent Chinese that snails are a delicacy on the owl menu. He was right. The owl ignored the morsel until we went away from the cage and then devoured it without compunction, proving that his appetite was intact.

About noon we took him out to photograph him. He did not resist as we tied a string to one leg, but when placed in the fork of a tree he rolled over backward and tried to fly. Then he sulked like a spoiled youngster. He did look pitifully small with his head drawn down between his wings. The pupils of his eyes contracted to mere black points, the irises shining like twin suns.

He was brown, and barred with faint whitish streaks that were more distinct on wings and back than on the breast where his feathers were much ruffled. He had quite a respectable tail for so small a bird. It was dark brown with white bars, narrow but clearly defined. His length was about eight inches. His proper name proved to be *Glaucidium whiteleyi* or more simply, "Whiteley's Owlet". We preferred his Chinese name, "Ma-du Diaw" which means "Cat-headed Bird." Since he was really a Chinese bird it seemed more appropriate than the Latin appellation.

Our Chinese neighbors were much interested in the owlet. The school children found no toads but they came over with a teacher to look at the bird. The children continually stroked their eyebrows as they stood before the cage, and explained that if the owl had a chance to count the number of hairs in their eyebrows and counted correctly they would die in a short time. This must have confused the owl.

After some discussion it was decided that "Ma-du Diaw" should have his liberty that evening. He should have felt gratified at the group which assembled for the purpose of saying "Good-bye." Mr. and Mrs. Wang brought their son and his nurse. Several teachers came over from the school. Perhaps he was beginning to appreciate our interest in his welfare, for when we took him out of the cage, our owlet perched contentedly in my sister's hand for ten minutes, making no attempt to fly.

Then suddenly, without warning and without the slightest sound, he was gone. Like a shadow, he drifted on noiseless wings over to a small tree and was hidden among its branches. Then began a plaintive calling, the same short chirping cry we had heard the evening before.

Another silent shadow passed over our heads. From another tree came the low, eerie call of the owl, less piercing than the cry of our American screech owl. To the ears of the young one on the tree that call was not a "hoot" but a call of encouragement and comfort—the voice of his mother promising succor after his frightful experiences, food after days of hunger, freedom after imprisonment, and companionship after solitude. His baby voice contin-

ued to call. She answered at short intervals. He told her all his troubles. She told him his troubles were over, that a long dark happy future and many meals of field mice lay ahead. He heard her promise and was content.

So we stood watching the moon climb up over the old city wall until two silent shadows swept over our heads and drifted away through the silvered darkness. Our cat-headed bird—our friend "Ma-du Diaw"—was gone!

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THE SAGE HEN'S SANCTUARY

"WE DO NOT KILL," SAYS NEVADA RANCHER WHO WELCOMES THE WILD THINGS

BY VIRGINIA JUNE

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ONE WOULD HARDLY EXPECT A BIRD HAVEN HERE

Yet many wild birds find sanctuary on this Nevada ranch where they are welcomed, fed and protected against guns

ONCE there was a person who wanted "to live in a house by the side of the road, and be a friend to man," and the world praised him for his ambition. But I know a person who does live by the side of the road, and who is a friend not only to man, but to all the creatures that walk over God's earth. His Nevada ranch is a wild life sanctuary, and on it, grouse quietly eat and move among the domestic fowl, deer browse about the buildings, killdeer are daily visitors and even the badger, much abused creature of the plains, goes and comes apparently without fear of humankind.

As I write these words, fourteen grouse are feeding around my door. If I should try to go out, I would have to shoo them off the steps. During the first few days of my visit here, I would startle them into flight, but now they merely stalk deliberately out of my way.

From where I sit, I can observe a mother hen teaching her six half-grown chicks the rudiments of making a living. They are beginning to use their own instincts, and are rather saucy in their short piping calls of independence. Sometimes the hen mother ignores their boastfulness; at other times, she calls them so sharply that they run after her to obey and keep by her side for several minutes.

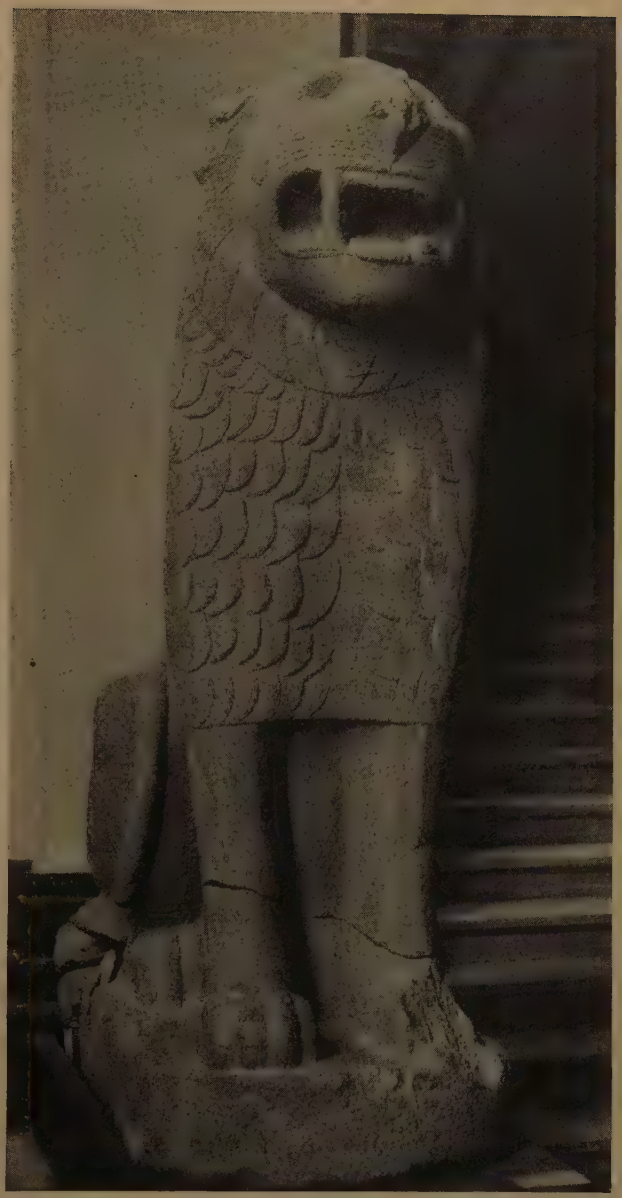
The morning always finds a large flock of sage hens foraging in the dewy grass in front of my cabin. Eventide is the time they gather in greatest numbers, however, and a larger flock always appears down at the feeding ground of the chickens and young turkeys near the willow-bordered brook not far from the ranch house. One evening the mistress counted thirty-four large and small sage grouse there.

It was three years ago, during an unusually dry "spell," that three sage hens wandered into the yard. Unmolested, they lingered, picking up food. The next day they returned, and soon others came in large numbers. No effort has ever been made to lure them with food and water. It is true that a small mountain stream runs down from the hills and through the yard, but a larger one winds its way through the meadow across the road not far away.

In the spring after the nesting season all the male grouse stay in the higher hill country, while the females with their broods seek the tender grass and greenery along meadow brooks in lower altitudes. In the late autumn the young grouse have grown as large as their mothers, and answer the call of the lonely males in the wind-swept hills. There they stay all winter, feeding upon the leaves and seeds of sage brush, and the ranch knows them not.

The owner of this ranch does not kill. Deer browse in safety—at any season—along a willow-bordered stream near the foothills, half a mile from the house. Rabbits stare with their big eyes at passing strangers, utterly unafraid. One August night I walked up the road toward the greenish silver and sheets of burnished copper of the sunset, walked until the rose, lavender and yellow which followed them in the sky had merged into the blue green of night, and all about me I could hear the wild life, seemingly undisturbed by my presence. Even a badger let me come close to him, as he was crossing from a field to his burrow. Nature and man seemed to have declared a truce.

Many visitors are attracted to the ranch by news of its tame-wild creatures. Some come with guns, and go away with the master's words in their minds—"We do not kill." Some think it a pity that such delicious table meat wanders about with feathers still in place. But they are the thoughtless ones, for if they stayed only a little while they would realize how much more pleasure and satisfaction these animals give by their friendliness than they could give in any other way. Hail to this rancher!



GUARDIAN OF THE GATES OF DAWN

This lion carved in granite was an object of temple worship in ancient Egypt and his cult was extensive throughout the kingdom in olden days

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A GODDESS OF FANTASTIC DESIGN

Thoueris, a strange deity, whose face was that both of crocodile and cow. She was, however, regarded as of little importance in the after-world

ANIMAL DEITIES OF ANCIENT EGYPT

BY RICHARD WRIGHT

PHOTOGRAPHS FROM HAMILTON M. WRIGHT

THE hundreds of American vacationists and scientists who annually visit Egypt are all greatly impressed by its vast store of archaeological subjects which include not only the world famous pyramids and scores of impressive temples but literally thousands of finely carved statues of gods and rulers made during the reign of the Pharaohs. A representative group of the best of these has recently been put on exhibition in the Cairo Museum at Cairo and will be seen this winter by all who visit Cairo, generally the first stopping place of travelers in the land of the Nile.

The early Egyptians humbly offered numerous sacrifices, often human, to their animal gods in the hope of either propitiating them or gaining their favor. The bul-

lock, without which agriculture in the rich Nile valley lands would have been impossible, was worshipped for his immense strength and virility. He became the principal god of Egypt. Other animals and birds, including the alligator, cat, cow, jackal, lion, and hawk, were venerated as gods of the highest order. At the height of Egyptian power and civilization animals were considered as being the incarnate form of a group of gods, the predecessors of the Egyptians in Egypt, and ordained to dwell in the after-world where every Egyptian hoped to go after death, and about them the Egyptians had built up a great store of religious legend. Flourishing cities existed along the Nile River valley from Cairo up the valley to Philæ in Nubia, 600 miles distant. They had been founded by various orders of Egyptian priests. Hieraconpolis, the Hawk-City, and Leontopolis, the Lion-City, were among the strongest of these religious centers. One may visit the well-preserved temples of several of these ancient communities today or see in the Cairo Museum the elaborately sculptured figures of the animal gods in whose honor the cities had been founded. The cow of Deir El Bahri in the Cairo Museum was considered sacred to Isis, the consort of Osiris, greatest of Egyptian gods and ruler of the sun, and also to Hathor, goddess of beauty, who lived in the underworld. This work, universally thought to be among the finest examples of Egyptian

STATUE OF THE GODDESS SEKHMET

One of the many interesting idols of an ancient day in Egypt now on exhibition in the Cairo Museum. In this goddess will be noted the influence of the eminence of the lion in Egyptian past since the goddess has the features of a proud lioness

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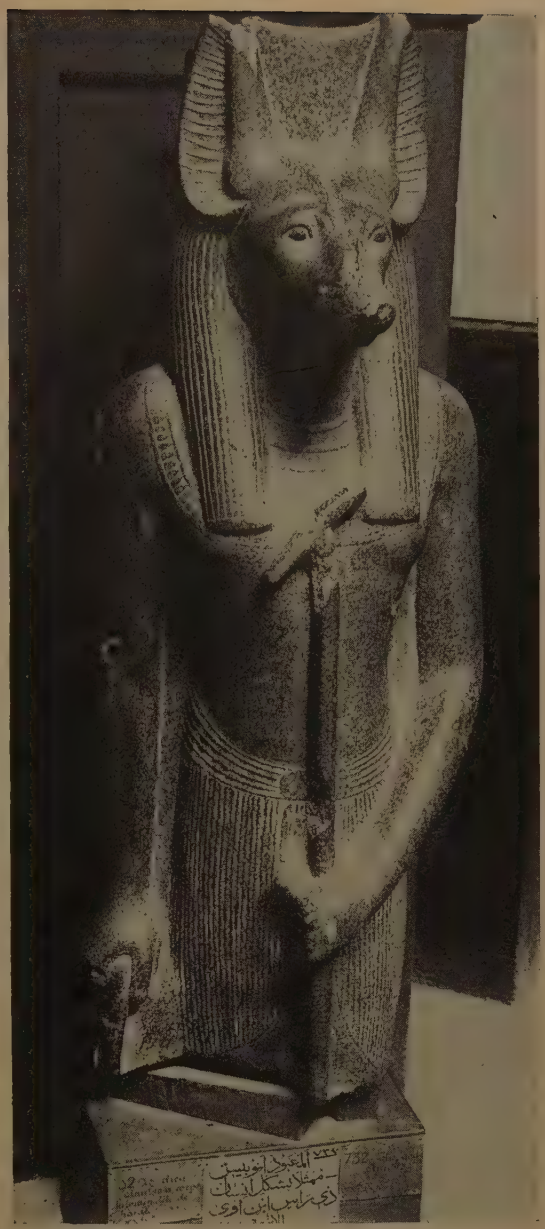
THE GREAT HAWK AT EDFOU, EGYPT

This statue of the crowned hawk stands outside the temple in this Egyptian city. The hawk was considered by early Egyptians to be the incarnate form of Horus, the son of Osiris, the sun god, and, accordingly, was the object of devout worship in the time of the Pharaohs

animal sculpture yet discovered, portrays an Egyptian sheltered by a sacred cow between whose horns rests the symbol of the sun. A bust of Anubis, jackal-faced god, constitutes one of the most interesting pieces of ancient statuary in the museum collection. Anubis was the god of the dead and the son of Osiris. His duties in the afterworld were to conduct the spirits of dead Egyptians through the underworld to Osiris, the supreme judge of mortal good and evil in the trial of the dead.

In primitive times, before religious myth had grown up, Anubis was the jackal god and was regarded by the superstitious ancients to have associations with the deceased because jackals customarily prowled around tombs. It is a fact that worship of Anubis preceded worship of Osiris, who eventually was recognized throughout Egypt and other Mediterranean countries as the king of the gods. A sitting lion executed in granite with painstaking craftsmanship gives an impressive appearance to one of the hall stairways within the museum. The cult of the lion was an ancient one in Egypt. He was worshipped for his great strength not only by the priests of Leontopolis but in other municipalities in the empire as well. He was given special veneration because of his supposed association with the solar deities including Osiris, Horus and Ra, and, according to Egyptian mythology, he guarded the gate of dawn through which the sun god passed every morning. Lions were kept in numerous Egyptian temples by the priesthood who imagined that the gods indicated their desire to their children on earth by cer-



THE GUIDE OF THE DEAD

Anubis, the jackal-faced god, was believed by ancient Egyptians to be incarnate in the bodies of jackals who customarily prowled around tombs. According to Egyptian mythology, Anubis was the god of the dead and lived in the underworld through which he guided the souls of departed humans to the great court of final judgment, presided over by Osiris, ruler of the sun and king of the gods

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THE SACRED COW OF THE BEAUTIFUL

One of the finest specimens of Pharaonic sculpture, the cow of Deir El Bahri, considered by the ancient priests as being sacred to Isis, greatest of the Egyptian goddesses and of Osiris, god of the sun, and, also, to Hathor, goddess of beauty. The idol depicts an Egyptian seeking protection beneath its sheltering form. Between the cow's horns rests the symbol of the sun

tain movements of the beast which the priests interpreted. In the great temple at Edfou, Egypt, stands a heroic sized statue of a crowned hawk, the type and symbol of the earliest Egyptian gods. The hawk was held to be an incarnate form of Horus, son of Osiris. Thoueris, a goddess with a face having the features of both crocodile and cow heads but relatively of little importance in the world of the gods, is another intriguing figure shown.

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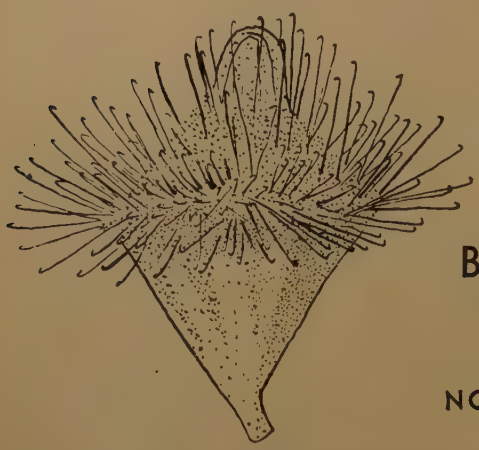

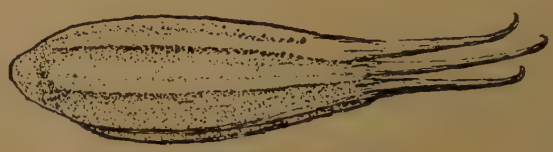

AGRIMONY, LOPSEED AND AVENS
Reading from left to right. All three are about a fourth of an inch in length

BURS OF OUR COMMON PLANTS

BY SALOME COMSTOCK-MILLER

NO. 10—THREE ROADSIDE HITCH-HIKERS

ANOTHER trio of plant hitch-hikers that catch on our clothing and travel with us until we pry them loose are agrimony, avens, and lopseed.

Agrimony and avens belong to the rose family. The former is a hairy plant with a leaf usually composed of several pairs of leaflets. The yellow blossoms are arranged along a tall, many-flowered stalk. Each flower produces a quarter-inch bur which contains one or two seeds. The weed is rather well-known.

Avens or geum, as it is also called, produces from every flower a large number of small burs each having a single hook and each about a quarter-inch long. These are arranged in a spherical or oblong head with the hooks each pointing in a different direction. Sometimes the burs are found with an extra joint attached to the long slender hook, but this joint is frail and easily detached, so is seldom seen. The plant is abundant in woods and pastures and along roadsides.

Lopseed has a quaint little bur with three hooks attached at the end. It is produced by a rather frail plant growing from one to three feet high, and having broad, pointed leaves, undivided except for shallow notches on the edges. The flowers appear in pairs along the stem, which is often branched. Each blossom creates one bur, about a fourth of an inch in length, which contains a single seed. The plant seems to have been named lopseed because the burs lop down against the stem. It is found in woods and shady places. Look for the free-riders.

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HARD-SKINNED PUFFBALLS

BY DR. W. A. MURRILL

Another article in the group on the hard-skinned puffballs

NO. 2

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A HARD-SKINNED puffball that resembles the small-warted puffball in color, large rooted base and characteristic warts, the large earth-stars in the stellar shape assumed after the fruiting body splits at maturity, and the large puffball in the manner in which the fruiting body is buried in the soil, is frequently found south of New York.

It is the New Jersey hard-skinned puffball, *Scleroderma flavidum*. It has a somewhat flattened appearance, is between three and five centimeters in diameter, and holds to the soil by many yellowish rootlets. The skin is yellow, leathery, firm and finely warted. It is slightly wrinkled above, and smooth below. The interior soon becomes brown and powdery, and the spores are the same color with a wrinkled exterior.

This species was described and named by Mr. Ellis, the distinguished mycologist of Newfield, New Jersey, whose priceless collection of fungi is now at the New York Botanical Garden. I have not found this species in New York, but it appears to range from New Jersey southward. I have specimens from Texas and Wisconsin, also, indicating the range.

"HELLO, SWEETHEART, MIND IF I COME CALLING TONIGHT?"
Maybe it was that, or, more likely, Barney is reading the riot act to the butcher for not getting his food on time. Barney was always hungry

BRINGING UP BARNEY

BY DORR G. YEAGER
PARK NATURALIST, ROCKY MOUNTAIN NATIONAL PARK

"SAY, Dorr, did you hear about the bear family over at Old Faithful," said Fred, reaching for another slice of bread.

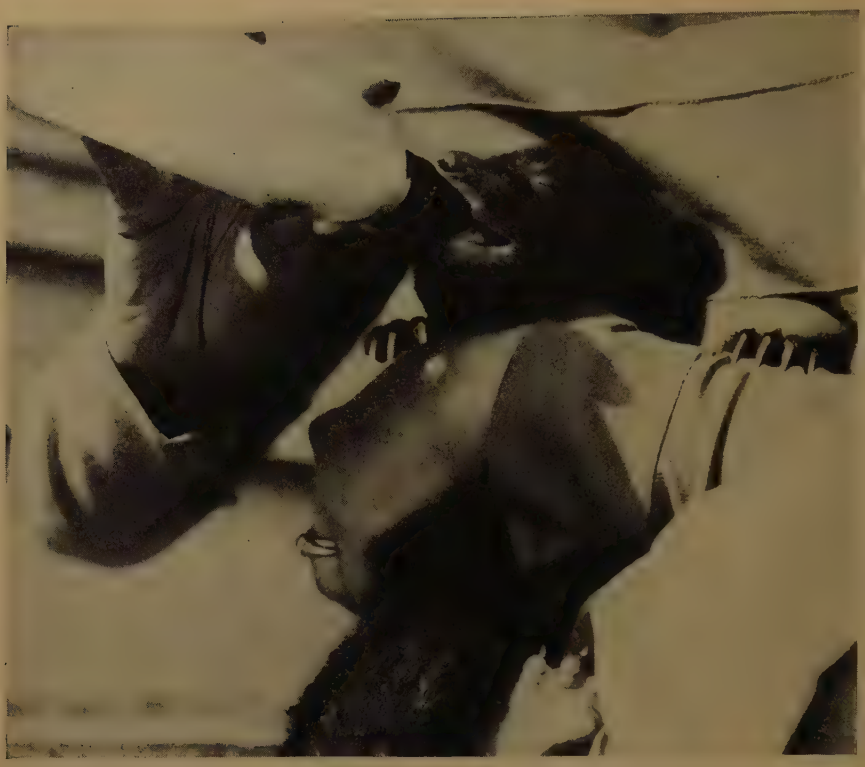
"Bear family at this time of year?" I asked.

"Yep," Fred replied, applying a liberal amount of butter. "Old Barney—you know him, the winter caretaker—found a mother and a couple of cubs hibernating under one of the buildings. He pried up a board in the floor and snoops at 'em every once in a while. Says the youngsters were born January 20—about."

"Golly," I said, "I'd like to see them." But I shook my head sadly because we were talking in the mess shack at Yellowstone Park Headquarters and Old Faithful was fifty miles and a four-day ski trip away. So we let the matter drop and went on consuming the stewed prunes.

Fate took a hand, however, and the middle of February found two of us on skis for a trip of 150 miles around the loop road. February 20 found us at Old Faithful, and it wasn't long before I was having a look at the bear family. The mother should have been, according to all the books, in a state of coma. She was not, however, and took a wide-awake and vicious slap at the floor with her paw when we peered in at her. We had to see those cubs, nevertheless, and made a grappling hook of stout wire, hoisting the month-old babies up.

They couldn't have tipped the scales at more than three pounds and looked like a pair of black puppies. Their eyes were still closed and their coats were still soft and



AT FEEDING TIME
One had to be careful of his claws because they were always busy when he was eating

silky. And what a row they put up! A bear cub a month old is not dumb, anyway.

That night the idea struck me. Why not take one of the cubs in to headquarters? Little information is to be found about bears of such a tender age. Here was an opportunity to observe the growth of one without constantly finding it necessary to seek shelter from a solicitous parent. We discussed the proposition pro and con. It would be no snap to get the little fellow safely over the remaining one hundred miles of ski trail, we agreed. But the pros finally triumphed and the following day we again brought the grappling hook into play. Our "fishing trip" was successful and we hoisted eight inches of squirming, twisting, squealing fur and claws up through the hole in the floor. We promptly christened him "Barney" in honor of our host, and then turned to the serious problem of nutrition.

The solution of this problem was necessary and soon became imperative. There was no such thing as a nipple at Old Faithful. The wails of the baby demanded immediate action. Necessity mothered another invention and soon the infant was contentedly gulping down diluted and sweetened condensed milk from a nursing bottle made from the rubber of an eye-dropper and an aspirin container.

If there be doubters when I state that transporting a month-old bear on skis for one hundred miles through the heart of Yellowstone is no joke, let them attempt it. Two problems confronted us. First we must keep the little fellow well fed, and we must protect him from the zero weather. The first was solved by carrying a bottle filled with milk with us. Its capacity was limited and was not actually sufficient for his needs, but it kept off the pangs of hunger during the hours of travel. The second problem was solved by wrapping him in an old sweater and tucking him into the front pocket of my parka. Several times a day he would wriggle about until his head stuck out under the flap of the pocket. Then we had to stop and rewrap him.

It was a trip marked by the painful memories of stopping along the trail to heat milk; of arising in cold snowshoe cabins at three in the morning to quiet a baby bear; of listening to the piercing screams emerging from the pocket of my parka as we trudged mile after mile over the unbroken snow of Yellowstone Park. Up over the Continental Divide we went—not once but four times; down across the great white expanse of Yellowstone Lake and on through Dunraven Pass, all the way to the music of a hungry and disgruntled black bear cub. True, he now and then slept, but upon awaking he would set up such a wail that I felt sure he would arouse some of his relatives from hibernation and that they would come bounding to the res-

BARNEY DOES SOME EXPLORING
Looking for leaks in the roof or, perhaps, it was leaps from the roof. Who can say?

BARNEY TRAVELS
This was his favorite place of going from one spot to another, and it was warm and easy, too

cue. After seven days and nights we reached headquarters. To my surprise Barney had actually gained on the trip in spite of the hardships which he had, by necessity, undergone.

One of his eyes had opened at Yellowstone Lake and the other at the Canyon. "He's a big bear," remarked my companion seriously. "His eyes opened fifteen miles apart." The first of these organs came into use on February 25, thirty-six days after birth.

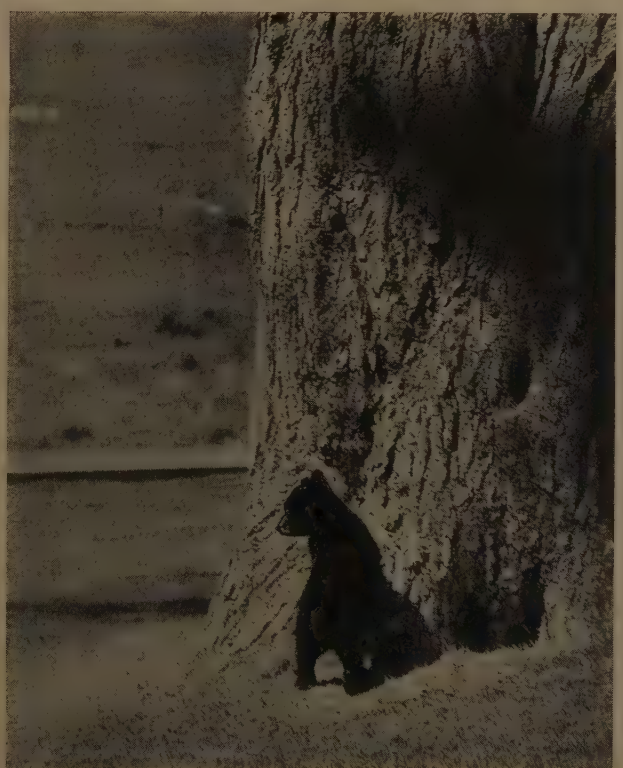
Once housed in a warm box and given regular feedings from a lambing nipple, Barney became a firm advocate of civilization. As his eyes opened wider he became more and more interested in his surroundings. The near-sightedness, so apparent in adult bears, was evident in Barney at an early age. Even when three months old, I was convinced that he could not clearly make out objects more than ten feet away from him.

Like all babies, he had difficulty in mastering the art of walking. Someone has said that the process of walking is a series of interrupted falls. This was true with Barney, only that his falls were not interrupted. He would stand on little legs wabbling pitifully under him, teetering backward and forward until he abruptly sat down or went over head first.

Eventually he learned the trick and would walk slowly across the floor lifting his feet very high in order not to trip over them. With walking, his field of investigation was greatly enlarged. Nothing within reach in the kitchen went unexplored. The rungs of chairs held a peculiar fascination for him. Over and under and around he would go until we felt that he must surely choke himself on one of them. Occasionally he would get so tangled amid the crosspieces that he was helpless and required human assistance. One of the exploring expeditions nearly ended in disaster. We heard a wail and found his head firmly wedged in the U-shaped drain trap under the sink. He looked for all the world like a cow in a stanchion as he twisted and howled, absolutely unable to free himself. Again human aid came to the rescue of a chagrined little bear.

As time went on he learned speed and he would go scampering across the floor, under chairs and around table legs in a terrifying manner. Sometimes he would spring straight into the air and land on all fours like a young lamb. These playful moods always came on a full stomach and never seemed to possess him when his thoughts were turned to the more serious matters of eating.

Feeding Barney was a matter of great concern in the household. Certain definite precautions had to be adopted so he was never fed with the naked hands. His nurse usually wore gloves because Barney was oblivious to everything else when he was taking nourishment. His little claws pawed the air wildly and could inflict an ugly wound. At other times he



TRY AND CATCH ME, HE SAYS
A mighty big tree for a mighty little bear, but Barney would try anything once

evidently realized that the claws and teeth should be used with discretion, because he seemed careful not to use them when being handled. His allotment of milk was gradually increased from two ounces to four. He preferred fresh milk to the canned variety and flatly refused to take anything unless a goodly amount of sugar had been added. He consumed his food with little grunts of contentment, very human indeed, and, when finished, his stomach assumed the proportions of a small balloon. I fear that Barney became a spoiled and pampered bear.

Although not easily frightened, he did at times show fear or, perhaps better, astonishment. A sudden move on the part of a person in the room, or the presence of something new always called forth a savage little "woof" from the infant. On one occasion I happened to drop a keyring at his feet and he nearly tumbled over backward in an attempt to escape from it. His exclamation of surprise or fear in the "woof" was almost identical to that of an adult bear when disturbed.

His democratic tendencies were daily becoming more evident. He liked anyone and everyone who would play with him or rub his ears. He would crawl into their arms and caress them affectionately with his little red tongue at the first signs of friendliness on their part. These signs worried me somewhat for it seemed not unlikely that, during the coming summer, a tourist walking leisurely down the street at Headquarters would be startled when he found a cub bear loping along at his side.

It so happened that Fate took a hand in Barney's career, however. Before the tourist season opened I was transferred to Rocky Mountain National Park and we were forced to part. He went first to stay at Grand Teton National Park and is now in an eastern zoo where, reports say, he is happy, healthy and much admired.

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FIFTY THOUSAND YEARS ON ICE

BY CHARLES W. GILMORE

FIFTY thousand years ago, more or less, a huge, hairy creature closely resembling a small elephant swallowed down a meal of plants and grasses, and then ambled over the frozen land on other duties. Perhaps it was night-time. Perhaps snow had covered a deep cleft in the rocks—we shall never know—but suddenly the soil gave way beneath him, and he was precipitated down into a deep crevice to his death.

Just a short while ago he was found, lying in frozen soil almost as he was that day he took the fatal step, along the Beresovka River in northeastern Siberia. By prompt action of scientists in Leningrad, his remains were saved before dogs, wolves and other flesh-eating animals feasted upon him as they have often done to many of his kind, and the National Museum in Washington was fortunate in securing a patch of skin, and good examples of the muscular tissue and of the undigested stomach contents.

RESTORATION OF AN ANCIENT
The reproduction of the old mammoth made by Pfizenmayer, who collected the specimen

His skin is an inch in thickness, and is heavily covered with short woolly hair sparsely intermixed with long bristles and with bunches of long reddish hair that varies in length from four to eight inches. In color the thick underwool closely resembles the summer coat of a young camel. A bunch of hair taken from the right shoulder reaches a length of more than thirty inches, and some from the tip of the tail is coarse in texture and black.

Many remains of mammoths have been found, not only in Siberia, but in Alaska, Europe, England and the United States, but only other Siberian specimens have been as well preserved as this. Many of them have furnished valuable supplies of ivory to the world; Dr. Middendorf, who visited Siberia in 1840, estimated the output of this fossil ivory to be one hundred and ten thousand pounds a year. From the great abundance of tusks the English naturalist, Lydekker, has suggested that these weapons were probably well developed in both sexes.

Although Alaska has contributed many mammoth skeletons, there are only three authentic cases on record where portions of the soft anatomy have been found. Numerous well preserved sets of bones have been found in the United States.

The mammoth is believed to have disappeared from the land of the living between ten and fifty thousand years ago. He was not a large animal, as is popularly believed; he apparently never exceeded nine feet six inches in height, which is less than the height attained by the living Indian elephant and considerably less than that of the African pachyderm. But, thanks to natural refrigeration, he forms one of the important chains to the past.

MR. RHODES AND A FRIEND

A tame sparrow hawk who recognizes a bird lover when it sees one

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A BIRD HOBBY

BY MARGARET WHITTEMORE

This is another story in the group that has appeared during the past two years telling of the Nature hobbies of interesting folks whose normal work carries them in spheres usually far removed from Nature

IT WAS a stormy night with a boisterous wind and heavy sleet. Harry L. Rhodes of Highland Park, near Topeka, sat in his study, reading, when something dashed with a dull thud against the window pane. He went to the window and opened it. There fell at his feet a strange little gray bird. He picked it up and found that it was somewhat injured and much frightened.

He placed it carefully in a canary cage, but in the morning it was still unable to fly. This happened late in the autumn, and the bird had evidently been lost in the storm. Mr. Rhodes took it with him as he started to his office in the city, and on the way drove around to see the park superintendent, a bird student. It was left there, where it could be carefully tended, and was nursed back to perfect health and given its freedom.

The following summer Mr. Rhodes was at Estes Park, Colorado, where he met the eminent naturalist, Charles Bowman Hutchins. He told Mr. Hutchins of his experience that stormy night, and was encouraged to take up the study of birds. Mr. Hutchins himself took him on many long walks in the mountains, helping to identify the notes and plumage.

That was over twenty years ago, and ever since then Mr. Rhodes has made the study of birds his hobby, until now he is considered an authority on them. He has a beautiful suburban home which has become a veritable bird sanctuary, with every inducement offered to attract them and give hospitable accommodation. Mr. Hutchins is also a guest at this home whenever he passes through Topeka.

Every available tree and post has been equipped with enticing bird houses. A tall pole with a spacious martin house at the top invites families of purple martins every spring. A family of flickers builds in the holes of an abandoned telephone pole, secured from the local street car company. Several bird baths and covered shelters for feeding winter residents are found throughout the grounds.

On either side of a high chimney in the living room Mr. and Mrs. Rhodes have placed an exquisite stained glass window, one representing a cardinal and the other a bluebird, each perched on a twig and outlined against a brilliant sky. These windows they designed themselves. They are especially beautiful when the early morning sun shines through them.

This year Mr. Rhodes determined to attract to his home, if possible, a rose-breasted grosbeak, by planting a certain variety of giant sunflower. He was rewarded one

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BIRD HOUSES ARE FOUND IN EVERY DIRECTION AROUND THE RHODES HOME

The garden gate and pathway at the place that Mr. Rhodes had appropriately called Rhodeside

morning by finding three of these visitors, so rare in that locality. He delights in experimenting with various grains to see what birds will be attracted by them, such as hemp, which attracts the goldfinch.

Among the birds commonly seen at "Rhodeside" are the chipping sparrow, nuthatch, black-capped chickadee, goldfinch, phoebe, cardinal, flicker, tufted titmouse, wren, red-headed woodpecker, chimney swift, kingbird, mourning dove, junco, bluebird, robin, rose-breasted grosbeak, evening grosbeak, and purple martin. On his ten-acre farm farther out in the country, Mr. Rhodes has found most of the birds native to Kansas.

Perhaps the most interesting phase of his hobby is his success in arousing a similar interest in the subject among his fellow-townsmen, encouraging the building of bird houses in the manual training departments of the city schools, conducting bird house exhibits, judging in such contests, and offering prizes for the best boxes and to the boys who first report their houses occupied. Through his efforts, moving pictures of birds and their habitats have been shown in the city auditorium, and he has himself given stereopticon lectures on the subject.

He conducts a weekly feature in the Topeka *Daily Capital*, called "Bird Notes," contributing these articles without pay. Space is given for questions and answers regarding bird life and this has now flowered into a book by the same title. Mr. Rhodes is an active member of the Topeka Press Club and is Publicity Director for the Topeka chapter of the Izaak Walton League. He has been instrumental in having four bird fountains placed in the corners of the municipal rose garden in a Topeka park, and has done much to encourage golf players to protect birds on the local links.

With other members of the Izaak Walton League and deputy game wardens he has distributed grain and suet throughout the snow and ice-covered fields, so that quail and other winter residents may not suffer starvation.

The birds know he is their friend, and even allow him to hold them, as evidenced by the accompanying photograph. This is a sparrow hawk, which was accidentally injured, but when given kind treatment became quite tame and did not try to fly away. This hobby is one that has benefited not only the birds, but the entire community as well. Friendship with birds has its many rewards.

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POLYPORUS LUCIDUS, THE KILLER

BY EDDIE W. WILSON

HIGH on the Blue Ridge Mountains of western North Carolina a break occurred in the trunk of a white pine. Perhaps the bruise was caused by a falling tree, or perhaps some thoughtless woodchopper gave the white pine a hack with his axe as he passed. Anyway there was a wound and into the wound the wind blew some tiny spores.

In the bruise there appeared a bracket fungus of a rich mahogany color above and a rusty brown below. This fungus, *Polyporus lucidus*, grew to be fourteen inches by nine inches. It is a thing of beauty—"a big piece of chocolate candy" as a little child has described it, or "a moose's antlers" according to a certain grown-up's description. Yet through its parasitic threads or mycelium came the death of the white pine. Thus, even among the trees, does the constant life battle in Nature go on and on.

• THE BLACK WILD CHERRY

A TREE OF VARIED USES

BY L. W. BROWNELL

BLOSSOMS OF WILD BLACK CHERRY
The racemes of white blooms make a pleasing contrast with the dark green foliage of the tree

THE wild black cherry, or rum cherry, as it is sometimes called, is the largest of the native cherry trees of this country. It ordinarily reaches a height of from fifty to seventy-five feet with a trunk diameter of two or three feet. Under favorable conditions, however, it has frequently been found somewhat more than one hundred feet tall. When growing in a forest, closely pressed on all sides by other trees, its trunk is long, slender and clean with a slight upward taper. Trees growing in the open, however, where their growth is in no way constricted, have a short trunk that continues into the narrow, oblong and usually irregular crown. At the northernmost limit of its range it rarely, if ever, attains to the dignity of more than a tall shrub or small sapling. The branches are small, slender and often drooping, the lowermost frequently nearly touching the ground.

The bark of the mature tree is a dark reddish brown, becoming more grayish in the southernmost portion of its range. The branches are at first pale green but soon change to a bright reddish brown. On the year-old branches the reddish outer bark may readily be peeled from the bright green inner layer.

The leaves grow alternately upon the stem. They are almost oval or oblong-lanceolate, and vary from two to five inches in length and from an inch to an inch and one half in width. They are sharply pointed at the tip and taper at the base into the short petiole which is rarely more than three quarters of an inch in length. At maturity the leaves are thick, entirely smooth, and of a dark, lustrous green, paler beneath. Their edges are slightly serrated with incurved teeth. In the autumn they turn to a clear yellow before falling.

The flowers open when the leaves are nearly full-grown. They are perfect, that is, both stamens and pistils are borne in the same blossom. They are from a quarter to a third of an inch in breadth and have five white petals.

The fruit is a round, somewhat flattened drupe borne in long drooping clusters. At first it is green but it slowly changes through various shades of red and orange and finally, when fully ripe in September, becomes a dark purple or black. The skin is thick and but little flesh separates it from the large pit. This flesh is sweet, juicy and has a pleasant flavor. The fruit is sold in the markets of Mexico and Central America under the name of Capulinos and is eaten both fresh and preserved. It is seldom seen in the markets in the United States, however.

THE WILD BLACK CHERRY IN SUMMER
Frequently it is somewhat topshaped as to outline and not specially attractive as an ornamental

The wild cherry is distributed from Nova Scotia westward through Canada and to Dakota, Nebraska and eastern Texas. Also it extends along the mountain ranges well into western Texas and southern New Mexico and on those of Mexico well down into Central America to Peru.

It grows best in rich, moist soil and it is in such situations that it attains its greatest growth. It is also found, however, in lighter, more sandy soil and even on rocky hillsides. In these latter locations, however, its growth is nearly always small and

scraggy and of little use as a fruit-bearer or otherwise.

The wild black cherry may be ranked with our more valuable timber trees. The wood is light, strong and hard. It has a close grain and is capable of taking a high polish. In color it is a rich, lustrous brown that deepens with age and may be favorably compared with either mahogany or rosewood. It has been sought so extensively, and cut so ruthlessly, that the larger trees are yearly becoming more and more scarce. It is also used to a considerable extent for inlay work and for handles on the better grade of tools.

The bark, especially of the branches and roots, is used in considerable quantities for medicinal purposes. The extract from the bark and the fruit appears in many of our old-fashioned remedies for coughs and "spring fever," as well as in many of the prescriptions given by the physicians of the present day for pulmonary troubles.

Owing to its ability to thrive under different climatic conditions and in many situations and varying soils, as well as its hardihood and quickness of growth and the value of the wood it produces, this tree should be one of those to be used extensively in reforestation. As an ornamental tree, however, for planting in parks and private grounds it is not entirely to be recommended on account of the unpleasantness that is made in the fall by the over-ripe fruit.

This was one of the first of all the American trees to be transplanted and cultivated extensively in Europe. It became established in English gardens some time before 1629. It was named *Prunus serotina* in 1788.

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A TARANTULA HAWK

BY DAVID J. MORRIS

All during the spring and summer days the people of the southwest from Texas to California may see the large tarantula hawk flying about over the fields from one milkweed plant to another.

Little does the average observer realize that this wasp has a foe for which she is ever on the watch and with which she becomes engaged in battle as soon as sighted. All this regardless of the fact that her own life is in as much danger as that of her foe, the large and dreaded tarantula spider.

TARANTULA HAWK ON MILKWEED
Flying about from plant to plant she is ever on the alert for her foe, the tarantula

The tarantula itself is commonly reputed to be poisonous and no person likes to come in contact with him. The tarantula hawk, being his enemy, is, therefore, the friend of man and should be protected as such. This wasp is, when adult, about two inches long with a wing spread of about the same length. The body is blue black and wings orange red. Her stinger is about three-fourths of an inch in length and the legs are very long. Technically the wasp is known as *Pepsis formosa*, but in the southwest is better known as the "cow killer."

Hark! Look! The large wasp hesitates in flight over a little bunch of grass, hesitates but a second, then with a sweep she strikes at something black on the ground; this is a tarantula spider, and they battle to the end of one or the other or both.

For a time the wasp is content with sweeping drives in an endeavor to strike the spider with her stinger, but directly the insect comes close enough for this, the long legs of the tarantula reach out and grab the wasp. For several moments there is nothing but a flash of wings and legs, a peculiar thrashing sound and an odor not soon to be forgotten. Soon, however, the pair becomes locked in a death grip, and none of their members seems to move but the stinger of the wasp and the powerful jaws of the tarantula. Thus they struggle for a full minute; two minutes they lie motionless and then the tarantula's legs begin to relax and he becomes limp. The great wasp now disengages herself from the gorilla-like grip, staggers around her dead foe several times to regain her composure and then starts that tedious half-flying walk to drag the paralyzed spider to her burrow, where it is to serve as food for her young, for the object of this battle against the spider is the provisioning of the earth chamber where the female wasp is to lay her eggs.

Other wasps are content to tackle spiders much smaller than themselves, but the bold tarantula hawk knows no fear and seems to be content with no prey smaller than the tarantula spider, often larger than herself. If she is successful it assures a start for the wasp babies she will never see. If she loses, it is all a part of the day's work. If both die, as is very often the case, in each other's arms, 'tis then each has lost in the eternal fight that all wild creatures wage to perpetuate their kind and keep a balance.

THE ROCK GARDEN HAS WINTER POSSIBILITIES

If it is wisely planted with dwarf evergreen and rock plants it will retain its greenness throughout the winter and give a delightful effect

WINTER EFFECTS IN THE GARDEN

BY VICTOR H. RIES

In our present day effort to obtain flowers in profusion throughout the season we have often overlooked the desirability of having something of interest during the winter months. Then our garden, if properly planned and planted, will give us an immense amount of satisfaction. On a cold, wintry day one enjoys the vista obtained through the window into the winter-planned garden. Warmer days tempt us forth to enjoy it at first hand, even though we don overcoat and rubbers to wander through the garden.

Many are the possibilities of winter effects in the garden. Here is a bit of evergreen, there a mass of colored fruits. In back we have a mass of colored twigs, over to one side fine-twigged shrubs to catch and hold the snow and to offer a haven to winter birds. In one corner gray, weathered, lichened and mossy rocks add a rugged dignity; even the bare tracery of vines over the garage and on the house add their bit to this picture. By the drive an evergreen ground cover or bits of evergreen plants keep the perennial border alive in winter.

The trees, shrubs, evergreens, vines and perennials having desirable winter effects are many. The problem is to select the better ones from the many available. We must choose those whose habits conform to our garden, whose style harmonizes with our landscape effect.

We all like to have something in our garden others do not. One plant which will give you a handicap over your neighbor by producing flowers through the winter is the Christmas rose, *Helleborus niger*. Its lustrous evergreen leaves are a joy at all times, but the greatest thrill comes with its bloom during the milder days of winter. The glossy white flowers nestled beneath the leaves peep out at you. It is an old-fashioned plant that will last for years once it is established. Plant it in a sheltered position, protected from wind, with a little sun, and it will more than repay you for its keep. It is a jewel of the winter garden.

We cannot always go forth in winter to enjoy the garden, however, so we must plan for its enjoyment from the windows of our home. Looking out from the living room, the dining room, the kitchen, or the sun porch, we should provide ourselves a choice bit of winter scenery.

In the selection of shrubs for our landscape plantings we seldom stop to consider what they look like without their foliage. Hydrangeas, for instance, although attractive in foliage and bloom, are so sparsely twigged as to be relatively inconspicuous in winter. The Thunberg spirea, on the other hand, with its mass of fine twigs, is decorative the year around. Although possessing no bright bark, their number and their grace give the desired effect. Just so we find that the viburnums, privets, golden-

bell, spireas, cotoneasters, barberries, and others give a mass of twig effect even though bare. Compare these with the absolute scantiness of the devils-walkingstick, *Aralia spinosa,* which has few, if any, branches after its huge compound leaves have fallen. This factor is worth considering, especially in screen and foundation plantings.

The colored twigs of other shrubs give a distinctive note during the winter. The red of the coral or red-twig dogwood, the purple of the silky dogwood, the yellow of the yellow-twig dogwood, and the green of the yellow kerria. Some gardens even have the willow used as a shrub in this way, cutting it back to the ground every spring. On a larger scale the gaunt, spotted branches of the sycamore, the gray branches of the silver and bolleana poplar, or the white of the white birch add their bit to the general effect, just as the gray foliage of the Russian olive does in summer. The various willows, if we but have the space for them, are graceful as well as colorful during the winter.

A DEPENDABLE IN THE WINTER GARDEN

A clump of the big-leafed wintercreeper is always to be relied upon and there are many others that are useful

EVERGREENS SHOULD BE WELL CHOSEN

Here effect is obtained with a group of Pfitzer junipers clustered around a single spiny Greek juniper

Remember all colored twigs are more brilliant the first year. Shrubs cut back to the ground every other spring will give the greatest effect in colored twigs.

Decorative fruits add a definite color interest, besides acting as a lure for birds. In some gardens where birds have been encouraged it may even be difficult to secure any great amount of winter effect because of the birds eating it all. Even then it is worth while.

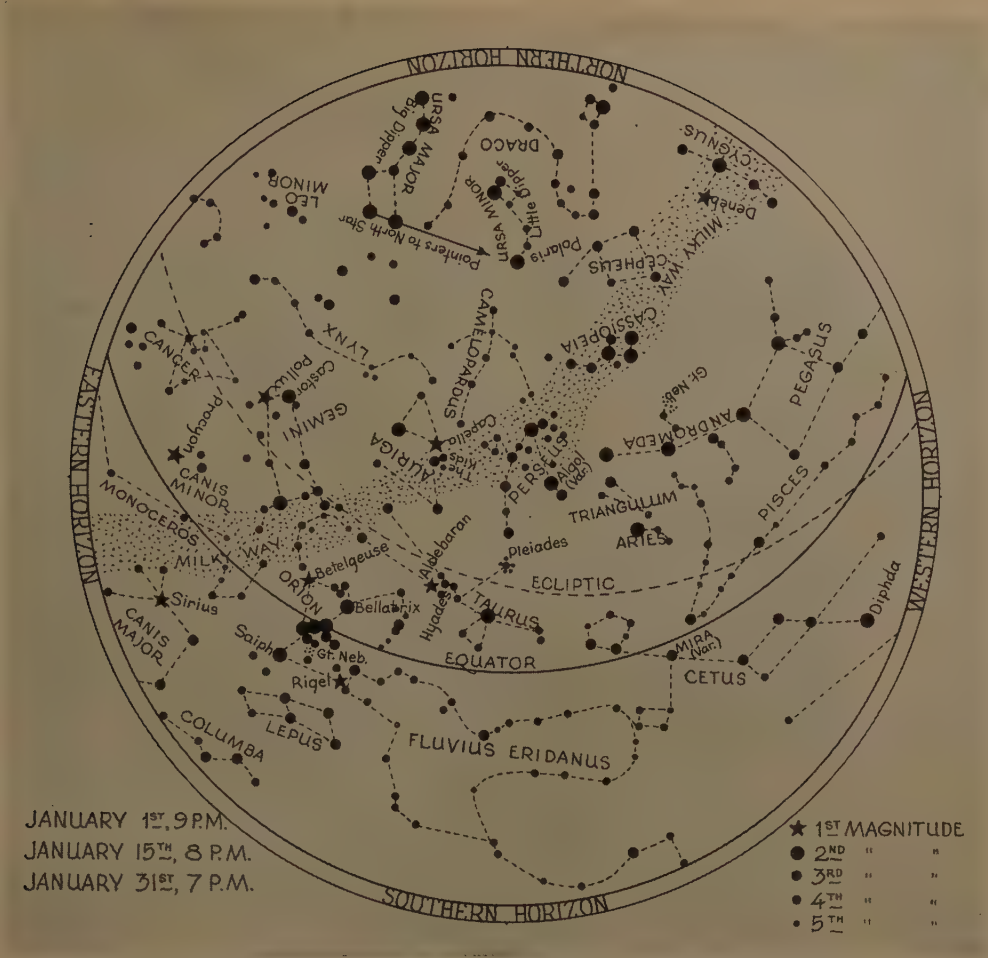
Finest among our fruited shrubs are some of our natives. What is more satisfying than a hawthorn laden with fruit, or a high bush cranberry, *Viburnum americana,* with all of its branches tipped with clusters of bright red berries which remain there all winter?

The nannyberry, *Viburnum lentago,* with its sprays of dark blue berries, or its sister, the black haw, with blue-black berries, are faithful in their fruiting habits. As our flowering dogwood becomes of age it will have a cluster of brilliant red berries where each so-called flower was in the spring. Why have to go to the woods to enjoy their brilliance?

It is surprising how few gardeners know our native wahoo, so often found growing along streams, in low ground, or even along our fence rows. Its bright orange fruits, hanging below a dark red canopy, are just as glorious as its more commonly grown European sister. And (Continued on page 43)

THE JEWEL OF THE WINTER GARDEN

The glistening white of the Christmas rose showing through the green leaves is a charm in the garden



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

CELESTIAL EVENTS OF THE NEW YEAR

BY ISABEL M. LEWIS

ALTHOUGH 1933 has nothing astronomically as attractive as the total solar eclipse of last August to offer, there are some interesting celestial happenings on the schedule for the coming year.

Mars, which is probably of more popular interest than any other planet because of its possibilities as an abode of life and its fascinating and varied surface markings which indicate seasonal changes, is due to come to perihelion on March 1. This is one of the less favorable oppositions, since the planet is 62,700,000 miles distant from the earth at nearest approach. It may be recalled that the closest possible approach of Mars to the earth is slightly under 35,000,000 miles. Nevertheless astronomers interested in the physical phenomena of the planets are preparing to keep this little neighboring world under scrutiny for some weeks before and after the date of opposition and we may expect to hear more than usual about the ruddy planet Mars within the next few months.

Occultations of stars by the moon occur in large numbers every year. The elements for the prediction of close to two thousand occultations of stars by the moon are published in *The American Ephemeris*. This list includes all stars brighter than about the 6½ magnitude occulted by the moon during the year in all parts of the world. These occultations are observed regularly not only at many observatories but by many amateur observers in many different lands of the northern and southern hemispheres. They are of exceptional value in determining the corrections that must be applied to the position of the moon to bring theory and observation into agreement. From observations of many occultations it is possible to tell closely just how much the predicted position of the moon is off from its true position. At the same time it is possible to get a good idea of the accuracy of the position of the star that is occulted. So occultations serve a double purpose in checking both the position of the moon and that of the star that is occulted, and the results of all these observations of occultations are utilized in improving the tables of the moon and the cata-

logues of zodiacal stars, resulting in more dependable data.

Since the path of the moon is confined to the zodiac, only stars within this belt of the heavens can be occulted. An occultation of a star by the moon is always an interesting phenomenon to observe. It also furnishes one of the proofs that our satellite has no atmosphere. When a star disappears behind the disk of the moon at "immersion", as it is called, or reappears at "emersion", the event takes place with startling suddenness. There is no gradual dimming of the light of the star as there would be if the moon were surrounded with a gaseous atmosphere such as envelops our own planet. Occultations of bright planets and bright stars by the moon are of unusual interest, but since occultations of any one star or planet, like an eclipse of the sun, are visible only from a limited portion of the earth's surface, occultations of a bright planet or first magnitude stars are not frequent occurrences in any one locality. In 1933 there will be occultations of Saturn and Venus and of the first magnitude stars, Regulus and Antares. The occultations of the two planets and of Antares will not be visible in the United States but there will be favorable occultations of Regulus visible in the eastern and central states and the first of these will occur on February 10, and, among other places, will be visible at Washington.

There will be but two eclipses in 1933, both annular eclipses of the sun. An annular eclipse, it may be recalled, is one in which the relative positions of sun and moon are such that the moon fails completely to cover the solar disk and there is a thin annulus or ring of light surrounding the dark lunar disk at the time that would correspond to mid-totality of a total solar eclipse. An annular eclipse may last much longer than a total eclipse of the sun or it may have a duration of less than a second. Some annular phases of this type of eclipse last longer than fifteen minutes while a total eclipse can never last more than 7½ minutes.

The first eclipse of 1933 will occur on February 24. The partial phase will be visible in the southern and central part of South America, all of Africa, except the extreme northwestern part, the western part of the Mediterranean, Greece, Asia Minor, Persia and Arabia. The annulus in this eclipse is visible within a very narrow path with a maximum duration of only 1 min. 55 secs. This path crosses South America, near the 40th parallel, the South Atlantic, and from Stephanieville, Africa, to Aden in Arabia. The next eclipse will occur on August 21. The partial phase will be visible in central and eastern Europe and northeastern Africa at sunrise, later in the morning, or near mid-day, in Siberia, central and southern Asia, and in the afternoon in the Philippines and East Indies. In Australia the eclipse will occur late in the afternoon or at sunset. The path of the annulus, also narrow in this eclipse, passes from Alexandria, in Egypt, over Bagdad, across India, grazing Delhi and Calcutta, across Siam to Borneo, and north Australia, ending on the coast of Queensland at sunset. The duration of the annular phase will be only 2 min. 18 secs., at the most; not a long time for study.

Six periodic comets are due to return in 1933. They are known by the names of Brorsen, Pons-Winnecke, De Vico-Swift, Giacobini, Finlay and Holmes. The first of these was the first of two periodic comets discovered by Brorsen. It has been observed only four times since its discovery in 1846 although it has a period of 5½ years. It was last seen in 1879 and is due to come to perihelion again in November, 1933. The Pons-Winnecke comet has a period of nearly six years and was discovered by Pons in 1819. Its orbit was calculated by Encke who found that it was moving in an ellipse with a period of about 5½ years but it was not seen again until 1858, when it was rediscovered by Winnecke. It has been observed at ten returns, the last in 1927, and it is due to return again in May.

The De Vico-Swift comet has a period of nearly 6½ years and is due to return in January.

This comet was discovered at Rome by De Vico in 1844, but it was not seen again until 1894 when E. Swift on Echo Mountain discovered a comet which was identified with that of De Vico. Between 1894 and 1900 the comet suffered serious perturbations from close approaches to Jupiter and it has not been seen at its future returns to perihelion. This comet, it is believed, is identical with one that appeared in 1678 that was easily visible to the naked eye. Giacobini's comet was discovered by that astronomer at Nice in 1900. It has a period of 6.6 years and was reobserved in 1913 and again in 1926. It is due at perihelion in June. Finlay's comet was discovered at the Cape Observatory in South Africa in 1886 and has a period of 6.8 years. It has been observed at four returns and is also due in June. It was observed in 1926 at its last return to perihelion. It also has suffered from serious perturbations in its orbit due to a close approach to Jupiter in 1910. Holmes comet was discovered independently in 1892 by Holmes on November 6 and Davidson on November 9. It has a period of nearly seven years and is due in August. This comet has been observed to fluctuate rapidly in brightness. On its returns in 1899 and 1906 it was reobserved and had decreased considerably in brightness. In 1919 a nebulous object was observed that was believed to have been this comet, but only one observation was obtained and so the comet could not be certainly identified. It was not seen at its return in 1926.

The year 1932 up to the present date, some weeks before the end of the year, has been remarkable for the number of comets discovered. Six comets were due to return in 1932 and five of them were rediscovered; three by that skilled and tireless observer of comets, Prof. van Biesbroeck of the Yerkes Observatory. In addition to the rediscovery of these periodic comets five new comets were discovered. Periodic comets are usually found as a result of searches. One hunts for the comet at about the time and place that it is expected to appear. The search may be made visually, usually with a powerful telescope and with the aid of predicted positions, based upon computations of the orbit made by astronomers skilled in this work which (Continued on page 47)

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HESTER'S PET PROVED THAT IT PAYS TO GO TO A GOOD SURGEON TO GET FIXED

"PECKY" HANGING FROM A TOWEL RACK WHILE HIS LAME FOOT GETS BETTER

"PECKY"

A PIGEON THAT WENT TO THE HOSPITAL

BY HIS PERSONAL PHYSICIAN

WHEN "Pecky" was a squab he had two strong good legs like his sister's. He grew up walking as all pigeons should.

He belonged to Ann Lee Granger, who loved him as a little girl should love a pretty white pigeon running about the garden paths. But misfortunes come to the best of us. The gardener stepped on "Pecky" and broke his leg.

Then there was wailing and some scolding for the gardener. The broken-hearted little girl was only comforted by the promise of the French maid that she would set the leg and fix it all right. "Pecky" was taken into the house and the maid put the leg into a splint and tied it up as well as she could. But it was long getting well and Ann Lee was a bit impatient and burdened with its care. So she gave him to Hester to see him through his recovery. Also Hester's father is a surgeon and perhaps he would look at it occasionally.

Finally "Pecky" was allowed to have the splint removed and it was taken off with a good deal of joy by his new mistress. But joy turned to ashes when it was discovered that the broken leg had been set wrongly and the foot pointed in the opposite direction from the good foot. It was a terrible blow to "Pecky" because he had to learn to walk all over again and on feet that wanted to go different ways. Gradually he learned to hoppity-hobble along in a painful-looking manner. Of course he was able to manage somehow and for two years he has been so, hobbling along afoot but strong and beautiful when awing. His lameness has made the whole family love him. They have taught him tricks, petted him, and made him one of the family. He bows "Good morning" and has learned to shake his head "No" in answer to some ques-

tions. He always nods briskly when he is asked, "Are you a good bird, Pecky?"

He loves piano music and will even leave the lap of his favorite in the family if anyone begins to play. If the piano is left open, he will fly to it and go crippling up and down the keys making music from his very lameness. When told to say "Bao Koo" he coos loudly several times and then stops. This trick he performs for Hester better than for any of the others.

He will sit in one's lap and be petted by the hour without tiring of it. He likes to have the short feathers of his head and neck scratched because he can't stand on one leg while he scratches with the other, as a normal pigeon would stand.

He used to love to go to the desert with us in the car and then fly about while the children played. Here again he met disaster and now he is wary of the desert.

We had gone to the Lybian Desert to roll rocks down the side of the gebel (hill). "Pecky" was sitting not far away when a desert kestrel swooped down upon him and sunk his cruel talons into "Pecky's" head. Fortunately a British "Tommy" was on the spot and he kicked the kestrel off and took "Pecky" over to a weeping Hester. She arrived home and presented the bleeding bird to her surgeon father and asked piteously, "Will he live, Daddy?"

His head was washed up and attended to and he was put to bed. With tender nursing he got all right except that the side of his head where the talon went in left him a bit cross-eyed and a trifle bald.

Hester went to Germany for the summer and while she was away her father decided to fix "Pecky's" leg. In order to find out how the leg would break, he bought two dead pigeons from the butcher and tried breaking their legs. He found that three of the bones had broken clean off and the other had not splintered badly.

He then made a little plaster cast and a cloth straight-jacket and adjusted the straight-jacket and wrapped up everything except the two legs. These came out through holes in the jacket. His head was covered and his wings bandaged down and then the leg was broken with one quick snap and it broke clean off. Turning it correctly about, the cast was put on and the bandages arranged to keep it in position and then "Pecky" was released and given some water. The reason no ether or chloroform was given is because they are very dangerous to birds and the pain of the breaking would be very shortly over.

Now "Pecky" hangs in his suspension straight-jacket and is getting well. He had to be hung in order to keep the foot from resting on the ground and moving the leg. He is suspended between the bars of a towel-rack and he has the freedom of his wings and his head so that he can get exercise of a sort and his food is so placed that he can help himself to both seed and water. Every day he is taken down a few times, turned on his back and allowed to rest from his awkward position while he is being petted. He loves it! To keep him from struggling at night, his wings are bandaged and a head-rest is supplied him so that he can sleep in peace. For wider exercise he is taken out on leash, so to speak, and allowed to fly at the end of a string. He gets good exercise that way. This time, with a real surgeon as his doctor, he ought to get well.

P. S. We have just learned from Cairo, Egypt, where "Pecky" lives, that he is all well again and his leg is as good as new. And Hester is very happy.

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WHAT DOES THE COVER TELL YOU?

THERE is a story in the picture on the cover of Nature Magazine this month. It is a story of the cold winter winds outside the cosy house. It is a story of the snow that covers many of the weeds and grasses and small bushes upon which are the seeds and berries that birds eat in winter.

The artist has also told a story by putting a canary on the window sill inside. This little yellow bird from the cage is looking at his wild cousins outside. What is he thinking?

Here is a chance for ten of the readers of Uncle Dick's department to win a subscription to Nature Magazine for a friend. Write, using not more than twenty words, what you think the canary might be thinking. Send it to Uncle Dick, Nature Magazine, 1214 Sixteenth Street, Washington, D. C., so that it will reach him before January 10. Put your age and full name and address on the answer. The contest is open to all of you youngsters under twelve who subscribe to Nature Magazine or whose parents subscribe. The ten most interesting answers to: "What is the canary thinking?" will win the free subscriptions. The judges will be the editors of Nature Magazine and the artist.

THE FRIEND-SHIP BOAT

By FLORENCE H. MOORE

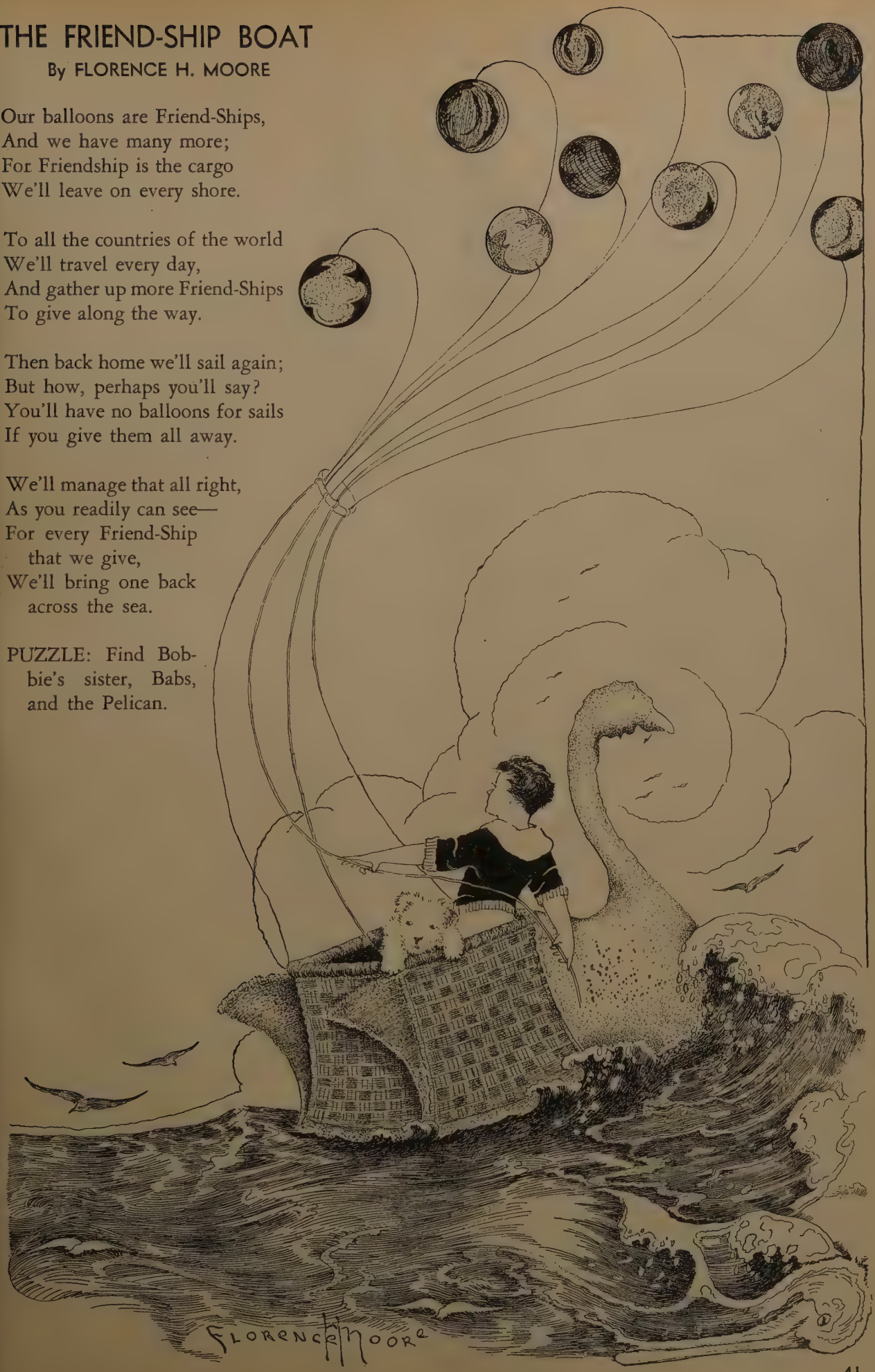
Our balloons are Friend-Ships,
And we have many more;
For Friendship is the cargo
We'll leave on every shore.

To all the countries of the world
We'll travel every day,
And gather up more Friend-Ships
To give along the way.

Then back home we'll sail again;
But how, perhaps you'll say?
You'll have no balloons for sails
If you give them all away.

We'll manage that all right,
As you readily can see—
For every Friend-Ship
that we give,
We'll bring one back
across the sea.

PUZZLE: Find Bobbie's sister, Babs, and the Pelican.



Australian Wild Life

Four interesting volumes have come to us over the seas from Australia and from the presses of Angus and Robertson of Sydney, who seem to be doing an excellent job of publishing in the interests of the Nature lovers of their continent. One of these books is entitled *Snakes of Australia* and it is the work of J. R. Kinghorn. We wish we had its counterpart in this country. It is a little pocket handbook after the manner of the Reed *Bird Guides* and is illustrated with color plates showing the characteristic features of the different snakes of the country. These plates, of course, are accompanied by a description of the reptiles and their habits. Next there is an interesting volume devoted to that amazing and interesting mammal, the duck-billed platypus. The title is *The Platypus* and it is written by Harry Burrell, who has spent virtually a lifetime studying this remarkable fellow. What there is to know about this mammal the author is reputed to know and it makes interesting reading. In *Insects of Australia and New Zealand* R. J. Tillyard presents a fine scientific work on a tremendous subject. This is primarily a textbook and, so far as New Zealand is concerned, at least, it is a pioneering task. Last, but not least, we have *Australian Finches in Bush and Aviary* by Neville W. Cayley. This book is of wide interest since many of these birds are found in aviaries outside of Australia. It deals both with the finches in the wild and those that have become popular as cage birds.

American Gardens

Marion Cran is an English garden lover and writer on gardening who has spent eight months of time and twenty-thousand miles of travel to see gardens in America. And from this she has written a book with the title *Gardens in America.* It is not a story of famous gardens here, rather is it a diary of her travels, a record of her reactions to the gardens of a land other than her own. And she has concluded, after this wandering about the face of the land, that those who say the gardens of England are best are wrong. "No," she declared, "there is no 'best' about it. American gardens are just as splendid, and as piteous, as aggravating and as precious, as maddening and as marvellous . . . and as healing as ours." Garden lovers will find in this book a new delight. It is a volume to cheer them while they wait for spring. It is delightful reading. The publishers are The Macmillan Company. The price is three dollars.

Civic Annual

A record in civic progress is to be found in the fourth volume of the *American Civic Annual* bringing progress down to date as of 1932 and brought out by the American Civic Association. The contents of the book are divided into progress that is national, regional, state and local. Consideration is given to the National Parks, to land planning, the Federal City, housing, regional planning, state planning, roadside improvement, and activities in the cities and towns. It is made up of concise summaries provided by leaders in these various fields. The book is available at two dollars a copy.

NATURE IN PRINT

Grizzlies of Admiralty

The great bears of Admiralty Island have been much in the news of late, sending many people to their geographies. They were the subject of the editorial in Nature Magazine last month. They were the subject of an article by Arthur Newton Pack, president of the American Nature Association, who had been to Admiralty to train his motion picture camera lens upon these great fellows. They have been the source of much discussion and no little heated argument, in the last of which John M. Holzworth, author of the new book, *The Twin Grizzlies of Admiralty Island*, has taken a leading part. This, however, is a book review, devoted to the volume by that title just received from the presses of J. B. Lippincott. Mr. Holzworth, who knows his bears (make no mistake about that) has fashioned a story of the grizzlies around the life of two now in the San Francisco Zoo. The author also knows the country of the grizzly and the Indians and guides of the region. This intimate knowledge, coupled with his sincere and indefatigable demand that these great bears be not destroyed but allowed to remain on Admiralty in a state of protection, gives the volume notable force and interest. It's a good book and we suggest that instead of reaching for your geography you stop by your bookstore. When you have read this volume you'll want to go to Admiralty yourself, and, most of all, you will want the bears of this island to be protected to the utmost.

Akeley Adventures

Lions, Gorillas, and their Neighbors is the alluring title of a new book just published by Dodd, Mead & Company, under the joint authorship of Carl and Mary L. Jobe Akeley. The late Carl Akeley was, up to the day of his death in Africa, not only a great explorer and scientist, but also a sympathetic and understanding leader of true conservation. He did not kill wild animals for any love of killing, but only in self defense or as specimens for the American Museum of Natural History in New York and the Field Museum of Natural History in Chicago, to perpetuate glimpses of Africa as he knew it before the overwhelming march of civilization. His books on African wild life have been and will probably continue to be the standard authority. About two years before his death in Africa he married Mary L. Jobe, already known as an explorer of the mountain fastnesses of northern British Columbia. Together they went to Africa, and when Carl Akeley met his death there he left to his wife a store of earlier notes and articles which, with additions of their experiences together, she has since presented to the American public in the form of two books —*Adventures in the African Jungle* and *Lions, Gorillas, and their Neighbors.* In Mrs. Akeley's first book, *Carl Akeley's Africa,* she has given the story of her husband's last African expedition, their collecting for African Hall, the convincing picture of the passing grandeur of Africa with its great herds of game and her own effort during the five months when, alone in the field, she became the leader of the expedition. *Lions, Gorillas, and their Neighbors,* just published by Dodd, Mead and Company, begins with the story of lion hunting in the old days before the advent of civilization, before the use of the automobile as a means for the easier slaughter of game. It is a simple and thrilling narrative written by Mr. Akeley himself. Then, by comparison, we have new adventures with lions under more recent conditions, which, written with a similar charm, present Africa as Mrs. Akeley and her husband saw it together. The book continues with chapters on wild dogs and lion spearing, hunting the wild buffalo, the search for the mountain gorillas, and so on through a variety of intensely interesting adventures with wild animals, pygmies, and other natives. The last chapter of all is devoted to Bill, the Akeleys' native gun boy, tracker and hunter, whose understanding and loyalty, as depicted by Mrs. Akeley, make a fitting close.

Perhaps more than most of the Akeley books *Lions, Gorillas, and their Neighbors* is directed especially to youth. It is not merely a story simple and thrilling; it is not merely a true record of African wild life with a powerful plea for conservation; but it presents to us glimpses of the life and character of a great man whom young readers may well recognize as worthy of emulation.

ARTHUR N. PACK

Insects and Medicine

Some of the most stirring stories in all medical history have had to do with the researches of man in an attempt to discover just how much transmission of disease may be laid at the door of insects. Men have laid down their lives in this endeavor but in the last four decades tremendous progress has been made. Indeed, such progress has been recorded that we now have a remarkable volume by Dr. Robert Matheson entitled *Medical Entomology* in which we find collected the fruits of these studies. Here is a volume that cannot help but be the textbook of a comparatively youthful phase of medical study and practise. Its author is Professor of Entomology of the New York State College of Agriculture at Cornell University. His work is a real contribution both to entomological and medical literature. It is published by Charles C. Thomas and sells for five dollars.

Songs of the Birds

Bert Dayton is a Nature lover who expressed himself in lines that rhyme and carry with them the breath of the outdoors. From his pen comes a new collection of poems under the title *Bird Songs and Songs of the Open.* Through the entire collection there runs a strain of lightness and melody, of the open, sunlit fields and the woods full of wild promise. Birds especially seem to have a message for Mr. Dayton and we are fortunate that he knows how to pass their word along to us. His publishers are the Palisade Press, 125 Church Street, New York City. We suspect, although it is not revealed on the cover, that the book sells for one dollar.

WINTER EFFECTS IN THE GARDEN

(Continued from page 36)

w often do we find our wild bladdernut, *aphylea,* with its balloon-like seed pods d finely striped bark, growing even in our ld gardens?

The gray dogwood after serving us all ason with the best of foliage decorates r early winter garden with its masses of nite berries. And who can forget the ory of our wild roses along the roadside vered with their red hips? Why not have e joy of these in our yards as well as in e wild? All of these may be obtained om any nursery.

Other shrubs giving us the same winter uit effects are the barberries, with their d berries, the Siebold viburnum with fall d early winter sprays of small red berries, , as a contrast, we may have the white of e snowberry or the red of the coralberry.

The bayberry, weed though it be in some ctions, is to be highly desired as a fine inter shrub. With it, as with the winter-rry, the flowers are not perfect, so both ale and female flowering plants must be ed to obtain a crop of fruit. A winter-rry in full fruit is one of the most bril-nt winter effects obtainable. It deserves place in any garden.

The privets are ideal shrubs because, in ldition to excellent foliage and dainty owers, they produce their fruit in pro-sion. The Regel and Ibota privet have ue-black berries, while the European privet s shiny black ones. The beautyberry with lavender fruit and the European euony-us with its red and orange are both color-l. All of these shrubs are among the finest e have for landscape work.

We should not overlook our native witch zel with its late fall and early winter oom. As a companion to it for January d February bloom we have the Japanese itch hazel. Blooming in late winter as it oes, we must not leave out the pussy illow, using the European form which s larger and finer "pussies".

One other possibility often overlooked the use of deciduous shrubs that hold eir leaves well into the winter. The fra-ant honeysuckle and the European privet oth belong to this class. In milder cli-ates or during mild winters they may be actically evergreen. The abelia and holly-af barberry are almost evergreen if not tirely so.

Although the generation past had many ejudices against vines on buildings, the esent generation is fast outgrowing them. e have but to look at some of our older ildings to realize how even the bare anches of Boston ivy softens the harsher chitectural lines in winter, while more nsely-twigged vines, like Japanese clema-and Japanese honeysuckle, cover even ore. The wistaria and that most rampant vines, the silverlace vine, will hide many ugly corner. For even greater effect we ay use an evergreen vine. The hardiest the winter creeper, *Euonymus radicans,* its large-leafed form which often fruits, *uonymus radicans vegetus.* For sheltered sitions or warmer sections of the country e may use that old favorite, the English y.

For fruiting effects the native bitter-weet, *Celastrus scandens,* or its Japanese ster, *C. orbiculatus,* will both prove satis-

(Continued on page 45)

A Rainbow in your garden!

Yes—and, though the famous "Dreer's Rainbow" (opposite Page 48 of Dreer's 1933 Garden Book) lasts all summer, it, too, is "born of the shower and colored by the sun".

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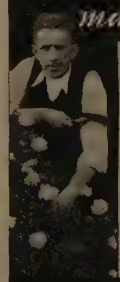

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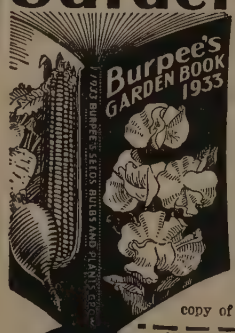

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Great Animal Stories

There have been written a few really great animal stories; a number of fine ones and a whole library of fair to poor ones. In fable and fairy tale, in fact and in fiction, these have been written down through the ages. Some have become part of the lives of many of us; others of later publication we may have missed. And now comes Ernest Thompson Seton with a book under the title *Famous Animal Stories,* in the compilation of which he has presided as editor. From the myth of Hercules and the Wild Beasts to the story of Tarka, the Otter, it is a grand collection. It is a splendid volume for the library of every boy and girl, and for that of a lot of grown-up boys and girls, also. The publishers are Brentano and the book sells for $3.50.

Creative Evolution

"Man, if he chooses, can here and now take a hand in creative evolution by creating new species of living organisms and replacing natural selection by human selection. For a thousand million years natural selection, as one of the processes of creative evolution, has dominated life, and for ten million years it has dominated the human mind, obsessing Man with the idea of an overruling fate. Scientific research has brought freedom to Man, and the future trend of creative evolution, including Man's own destiny, depends entirely on his response to the new knowledge and on his intelligent application of these discoveries in the near and distant future."

This quotation from the preface to *The Mechanism of Creative Evolution* by C. C. Hurst gives the key to this volume. Its concern is with asssembling the facts already established in research with respect to the genes and chromosomes which constitute the physical basis of creative evolution. The author's treatment is, of course, scientific, but, at the same time, surprisingly simple and even, in the main, intelligible to the utter laymen. The publishers are Macmillan and the price is six dollars.

For Anglers

Those who wield the rod and reel and plan to try casting a fly in foreign waters would do well to provide themselves with copies of *Haunts and Hints for Anglers* and *Around the Coast with Rod and Line* if they plan to cast a fly or drop over a troll line in British waters. These two excellent books have been gotten together by the Great Western Railway of England. The first named is illustrated with some excellent color plates of fish and flies and is an amazing compendium of information about stream fishing in England. We didn't realize there was so much of it to be had. The other book deals with sea fishing, as the title indicates. They sell for a shilling apiece.

Bird Temperatures

Testifying to an almost unbelievable amount of study and research, *Physiology of the Temperature of Birds* by S. Prentiss Baldwin and S. Charles Kendeigh is an interesting and unique addition to ornithological literature. It is Volume III of the scientific publications of the Cleveland Museum of Natural History and is the twenty-first contribution from the Baldwin Bird Research Laboratory at Gates Mills, Ohio. The activating purpose of this work is to shed light on the physiology of bird temperature and to discover, in part at least, the relation existing between these temperatures and the environmental conditions under which the bird lives. The study was made with both the physiological and ecological considerations in mind and thirty-one different species of birds were included. Space does not permit giving any worthwhile indication of the conclusions reached, and, in fact, that is the function of the book itself. Suffice it to say that the authors, already noted for their distinctive ornithological contributions, have again placed students of birds in their debt.

On Useful Plants

Doubtless few of us ever stop to think of the wide variety of plants that contribute to our well-being, both dietary and otherwise. We know those that yield fruits and vegetables for our tables but many others supply things for us in forms that do not suggest the plant at all. There is particular interest, therefore, in *Useful Plants of the World* by Willard N. Clute. This is, in fact, a second edition in which the material in the first edition has been expanded to include many secondary plants. The book covers food plants and their sources; condiments and perfumes; beverages and stimulants; textiles; dyes, soaps and tannins; gums, resins and rubbers; oils and fats; drug plants; wood and wood products and decorative plants. It is published by Willard N. Clute and Co., Indianapolis, Indiana.

Ditmars Reminisces

We have often hoped that some day Raymond Ditmars would tell, in book form, some of the interesting stories of his life as a naturalist. Now he has done it and the book bears the title *Thrills of a Naturalist's Quest.* Here Dr. Ditmars (certainly we do not have to identify him as the Curator of Mammals and Reptiles at the New York Zoological Park) has gone back into his active, varied and often thrilling life and set down some of the more interesting of his experiences. He reveals himself in a new rôle as a writer because these stories are rich in descriptive "kick" and in humor. In his style he has gone way back to the days when he was a newspaper reporter between work as an entomologist and his present work. He has shed the scientific mantle, so far, at least, as style goes, and given us a glorious animal book that is different. Don't miss it. Macmillan has published it and the price is $3.50.

Bailey on Trip

Travelling for three months through the canyons and mountains of northwestern Mexico, Vernon Bailey of the United States Biological Survey and a member of the Scientific Consulting Board of Nature Magazine, and Frederic Winthrop, Jr., collector for the Museum of Comparative Zoology at Cambridge, Mass., hope to learn much that is new. Mr. Bailey says that the region has never been explored biologically and many data should be found on life zones and bird ranges.

Sonnets of Scenery

This is the title of a little booklet of verse written and published by Willis Hudspeth. As in his previous poetry he catches in this collection the true breath of the outdoors. He has a rare ability to write rhymed pictures. We are not carping when we express the wish that these verses might have been given a better chance typographically than they are in this closely-printed little booklet. However, these are parlous days and printing still costs money, so the poet has substituted verses for white space in this collection. The booklet sells for one dollar and can be obtained from the author at 2568 Crown Point Avenue, Omaha, Nebraska.

Foods of Fur-Bearers

Reflecting a program which seeks to substitute facts for guesses, *Foods of Some Predatory Fur-Bearing Animals in Michigan* has been brought out as the first of a series of booklets by the School of Forestry and Conservation of the University of Michigan. The 52-page booklet is the work of Ned Dearborn, assistant professor of forest zoology and is the result of a careful study of the food habits of the opossum, raccoon, red fox, coyote, wild cat, mink, New York weasel, skunk and badger. Copies are available at twenty-five cents from the University at Ann Arbor.

Readers' Guide Index

While NATURE MAGAZINE is now considering the somewhat considerable task of compiling and issuing an index to the first twenty volumes and first ten years of the publication, readers may find helpful reference to subject-headings in the Readers' Guide to Periodical Literature. This covers only the past three and one-half years of NATURE MAGAZINE, however. The Guide is to be found in libraries.

A Tree Society

Dedicated to a campaign against the "tree butcher" and to the education of the public to matters of everyday tree care, the American Society of Arborists was formed in Cleveland, Ohio, at the recent National Shade Tree Conference held there. Membership is limited to those who have been engaged, as their major activity, in the care and protection of shade and ornamental trees over a period of at least ten years. Charles F. Irish of 418 East 105th Street, Cleveland, is the president.

Natural Science

A volume which should afford both ideas and orientation to the teacher of natural science is *Cultural Natural Science for the Junior High School* by Paul Ammon Maxwell, professor of education at the Peru, Nebraska, State Teachers College. Natural science is, of course, a vital fundamental in education and, probably because of its importance, the methods through which it is imparted are various. We have not space here to go into the interesting pedagogical idea that is the inspiration of this book, but we do feel that any teacher of natural science must certainly benefit by acquaintance with it. The publishers are Williams and Wilkins and the price is two dollars.

(Continued from page 43)

ctory. The latter form is slightly more ushy and more profusely fruited, but the dividual fruits are smaller.

Occasionally some of the herbaceous per-nials add their bit to the winter scene. utstanding is the blackberry lily, *Pardan-us,* with its blackberry-like seeds.

All of these winter effects may be easily btained, and still we have not resorted to e so-called evergreens. Evergreens add richness and dignity to the winter garden hich can be achieved in no other way. his is equally true of both the broad-leafed rms as well as the conifers. The broad-afed evergreens are seldom used as much as often as they should be. In many gar-ens they may be used to better advantage an the conifers.

The one handicap with some broadleaf pes, such as rhododendrons, mountain urel and evergreen azaleas, is their de-and for an acid soil. This is especially true the middle western states, where great re is necessary in the preparation of the il. Otherwise these plants are hardy, vig-rous and most satisfactory.

Among the broadleaf evergreens that o not demand an acid soil are the various rms of holly, *Ilex,* which may be grown a sheltered place in the North. The ink-rry, *Ilex glabra,* makes a fine winter effect. he boxwood in its many varieties can be rown in most gardens even in the North, in a sheltered place.

The evergreen barberries, *Berberis ver-iculosa, B. julianae,* and others are de-ghtfully different. The several forms of ergreen euonymus may be used as shrubs well as vines. *Pieris floribunda* and *Leu-thae* may be used with the conifers or one. Nor should we overlook that peer English gardens, the firethorn, *Pracantha.*

Among the conifers it is more difficult decide upon those we desire. A word advice may be welcome—beware of too any slender, accent types or an overdose low, round formal types. Use more of e irregular, informal habits of growth. Where a low effect is desired we may use e creeping or horizontal junipers. For a ightly higher effect but still low, the itzer junipers and Japanese yew are among e finest of all evergreens. Hardy, vigorous, sily grown—they increase in beauty with ge. Discretion should be used in buying é so-called blue and golden varieties since few of these go a long way. Use the green rms almost entirely.

For larger effect we may use the pines, ch as the Austrian, Scotch, red or white, membering that they all become trees. e may in their place use the various forms spruce or that all-around good evergreen, e Douglas fir. Our native hemlock al-ough slow growing has a grace and charm equalled by any of the foreign-born ecies. The junipers offer tall varieties as ell as dwarf. If you must have a blue, try e silver cedar, *Juniperus virginiana glauca.*

And so we could go on indefinitely men-oning or discussing plant material for nter effect, but we have a sufficient quan-y now. It is up to us to plant them either is spring or next fall. Then and only then ll we enjoy our garden to its fullest ex-nt.

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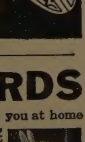

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CELESTIAL EVENTS OF THE NEW YEAR

(Continued from page 38)

give the observer the probable position of the comet on certain dates within very narrow limits. On the other hand, it may be that the discovery is made by means of the photographic plate attached to the eye end of the telescope. In the first case the comet is usually seen as a faint, hazy, nebulous patch. More often than not it has no tail. Periodic comets are usually faint, telescopic objects. If the comet is found photographically it often appears on the photographic plate as a blurred object resembling a star image out of focus. News of the discovery is usually telegraphed to other observatories and other telescopes are then turned toward the position furnished. The comet is usually picked up easily after the first discovery unless cloudy days intervene or the object is faint and difficult to observe. After a series of observations are obtained a new and better orbit can be computed and future returns can be more accurately predicted.

It is an interesting fact that all comets are by no means discovered by professional astronomers alone. Here is a field of astronomy where an enthusiastic and persevering amateur may do some work of real astronomical value as has been well exemplified this past year in the discovery of the brightest of the new comets of 1932. This comet, which bears the name of Peltier-Whipple, or 1932 k, was first reported by L. C. Peltier of Delphos, Ohio, and is his third new comet. Mr. Peltier is also a member of the American Association of Variable Star Observers and is reported to have more observations of variable stars to his credit than any other observer in this country. The discovery of the new comet was reported by mail to Prof. van Biesbroeck who immediately recognized the fact that the comet was a new one and telegraphed the news of the discovery to the Harvard College Observatory. On the morning of the same day, as it happened, Dr. F. L. Whipple of that observatory had developed a photographic plate, exposed three days before, and had noted the image of an object resembling a comet of the seventh magnitude. The comet will therefore bear the name of Peltier-Whipple for the two observations were of the same object. The first new comet of 1932 also bears a double name, Houghton-Ensor. The discoverers of this comet were also variable star observers and were observing the same variable star when they noted a nebulous object that soon revealed its cometary motion. This amounted to more than a degree and a half a day, and carried it during six weeks from a point near the south pole of the heavens over the celestial equator into the northern hemisphere. Comet-seeking is a pursuit, then, that is not reserved exclusively for the professional astronomer. The chief essentials for a successful amateur comet-hunter are: good sky atlases, a modest-sized telescope, if possible, though much can be accomplished with good binoculars, and, first and last, persistence and perseverance and that familiarity with the constellations that comes from constant scrutiny and that enables one to recognize the presence of an unfamiliar object when it appears. How faint a comet one may pick up will depend on the power of the telescope. Many comets are well within reach of a three-inch telescope. (*Continued on page* 48)

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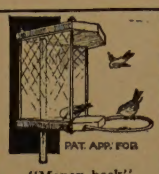

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Planets, especially Saturn and Jupiter, are always objects of special interest for the fortunate possessors of small telescopes. Saturn comes into conjunction with the sun on Jan. 27, and is now too low in the west to be seen to advantage. Jupiter, however, is now visible late in the evening in Virgo in the eastern sky. Mars is now in Leo, only a few degrees northwest of Jupiter, from which it can be easily distinguished by its reddish color. Although not as bright as Jupiter it will surpass all stars now visible, with the exception of Sirius, before the month is over, as it is now increasing very rapidly in brightness as it draws nearer to the earth. Venus is still a morning star in the east and on the 24th of January will be in conjunction with the waning crescent moon. Mercury will be in conjunction with the sun early in February and is not well placed for observation this month.

Condemn Traps

At its recent convention the Wisconsin Federation of Women's Clubs went emphatically on record against the steel trap, declaring that the organization "frowns upon this brutal and wanton way of taking life, and furthermore recommends that speedy legislation be enacted for the abolition of all devices for the taking of fur-bearing animals which do not kill immediately or capture alive." The Federation also demanded prompt enactment of laws that would protect the great blue heron, now faced with extinction in Wisconsin.

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'T SOUNDS incredible, but nevertheless it is true. If everybody in this world of ours were six feet tall and a foot and a half wide and a foot thick (and that is making people a little bigger an they usually are), then the whole of the human race (and cording to the latest available statistics there are now nearly 000,000,000 descendants of the original Homo Sapiens and his ife) could be packed into a box measuring half a mile in each rection. That, as I just said, sounds incredible, but if you don't elieve me, figure it out for yourself and you will find it to be rrect.

If we transported that box to the Grand Canyon of Arizona d balanced it neatly on the low stone wall that keeps people om breaking their necks when stunned by the incredible beauty that silent witness of the forces of Eternity, and then called little oodle, the dachshund, and told him (the tiny beast is very intel-gent and loves to oblige) to givethe unwieldy contraption a slight ish withhis softbrownnose, therewould be a moment of crunching and ripping as the wooden planks loosened stones and shrubs and trees on their downward path, and then a low and even softer bumpity-bumpity-bump and a sudden splash when the outer edges struck the banks of the Colorado River.

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The human sardines in their mortuary chest would soon be forgotten. The Canyon would go on battling wind and air and sun and rain as it has done since it was created. The world would continue to run its even course through the uncharted heavens. The astronomers on distant and nearby planets would have noticed nothing out of the ordinary. A century from now, a little mound, densely covered with vegetable matter, would perhaps indicate where humanity lay buried.

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See Other Side

(continued from preceding page)

man can contrive. We see it relatively, immense to our little selves and yet itself a grain in a world of universes. We see it, remarkably, not as a simple surface, but in its three full dimensions—and what an unexpected difference that simple change in conception makes! For Van Loon shows immense mountain ranges hidden deep in the oceans; the continents themselves plateaus above the water; the tide—"all day and all night a broad strip of water several hundred miles wide following in the wake of the moonlight"—the crust of the Earth so full of holes it is comparable

to a sponge; and so on! We see th stages it has passed through, whic explain its present form and phe nomena, its multiform creatures, ou own history, and how even the pif fling politics we waste our breath upon may be determine by the course of one of its winds or the temperature o a little part of its water.

Finally, in growing awe, we come to realize tha what it now is,— this ancient Mother of us all, thi huge revolving ball of gas and matter,— it will not b tomorrow.

WHY THIS BOOK IS OFFERED FREE...

THE Book-of-the-Month Club knows that there are a great many readers who have intended in the past to join it, and have neglected to do so through pure oversight. This offer is made, frankly, to overcome that procrastination by making it really worthwhile for such persons not to delay longer. We suggest simply that you send the postcard below to get full information as to what the Club does for book-readers, and then decide once for all whether or not you want to join. Are you aware, for instance, *that as a member you are not obliged to take a book every month;* nor are you ever obliged to take the specific book-of-the-month chosen by the judges. You may buy it or not, as you please, after reading the judges' prepublication report about it. *Nor do you have to pay any fixed sum to be a member of the Club*—there are no dues, no fees, no fixed charges of any kind. You simply pay the regular retail price for such books as you decide to buy. What then is the advantage of joining?

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There are several other advantages like these, not read ily measurable in money, that cannot be outlined here fo lack of space. Surely, within the next year, the distin guished judges of the Club will choose as the book-of-the month or recommend as alternates, *at least a few book* that you will be very anxious not to miss and which yo will buy anyway. Why not—by joining the Club—mak sure you get these instead of missing them, which so ofte happens; get the really substantial advantages the Clu affords (such as the book-dividends mentioned, if nothin else), and at the same time get a copy of VAN LOON'S GEOGRAPHY, free. Send the postcard below, for mor complete information as to how the Club operates.

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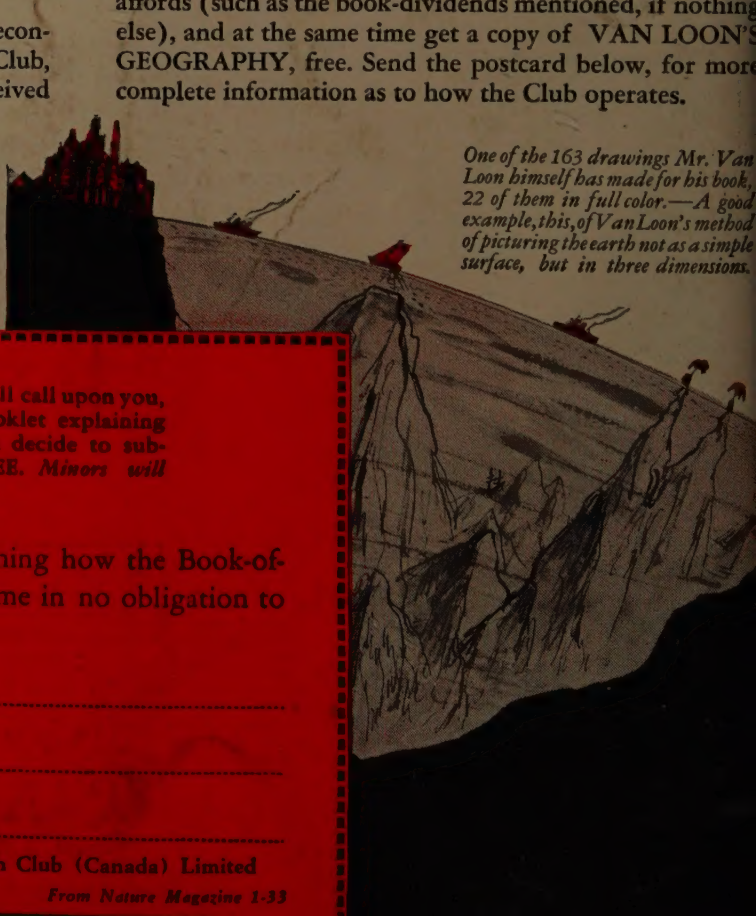

One of the 163 drawings Mr. Van Loon himself has made for his book, 22 of them in full color.—A good example, this, of Van Loon's method of picturing the earth not as a simple surface, but in three dimensions.

IMPORTANT—PLEASE READ—No salesman will call upon you, if you send this card. You will simply receive a booklet explaining how the club operates. After reading it, should you decide to subscribe, you will receive Van Loon's Geography FREE. *Minors will not be enrolled as members without a parent's consent.*

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